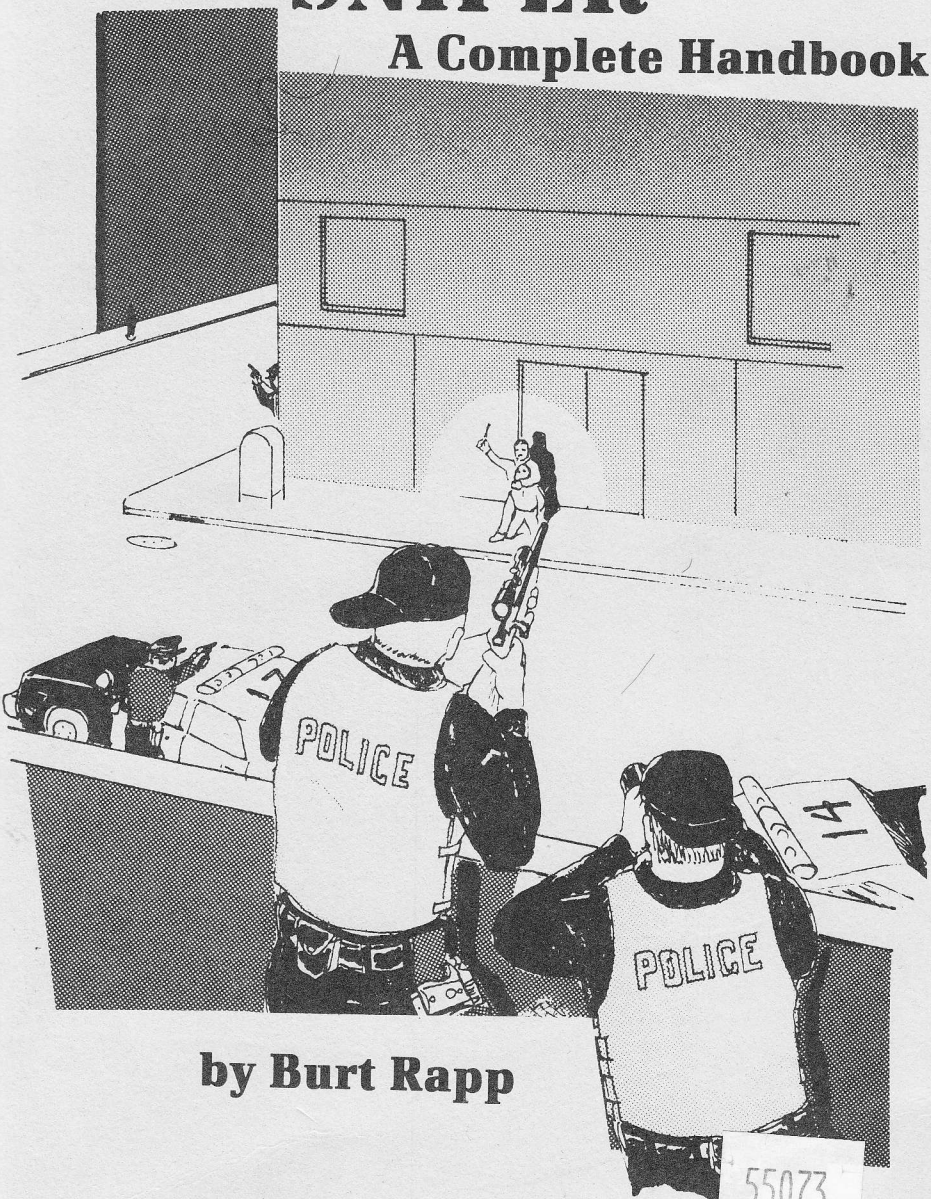
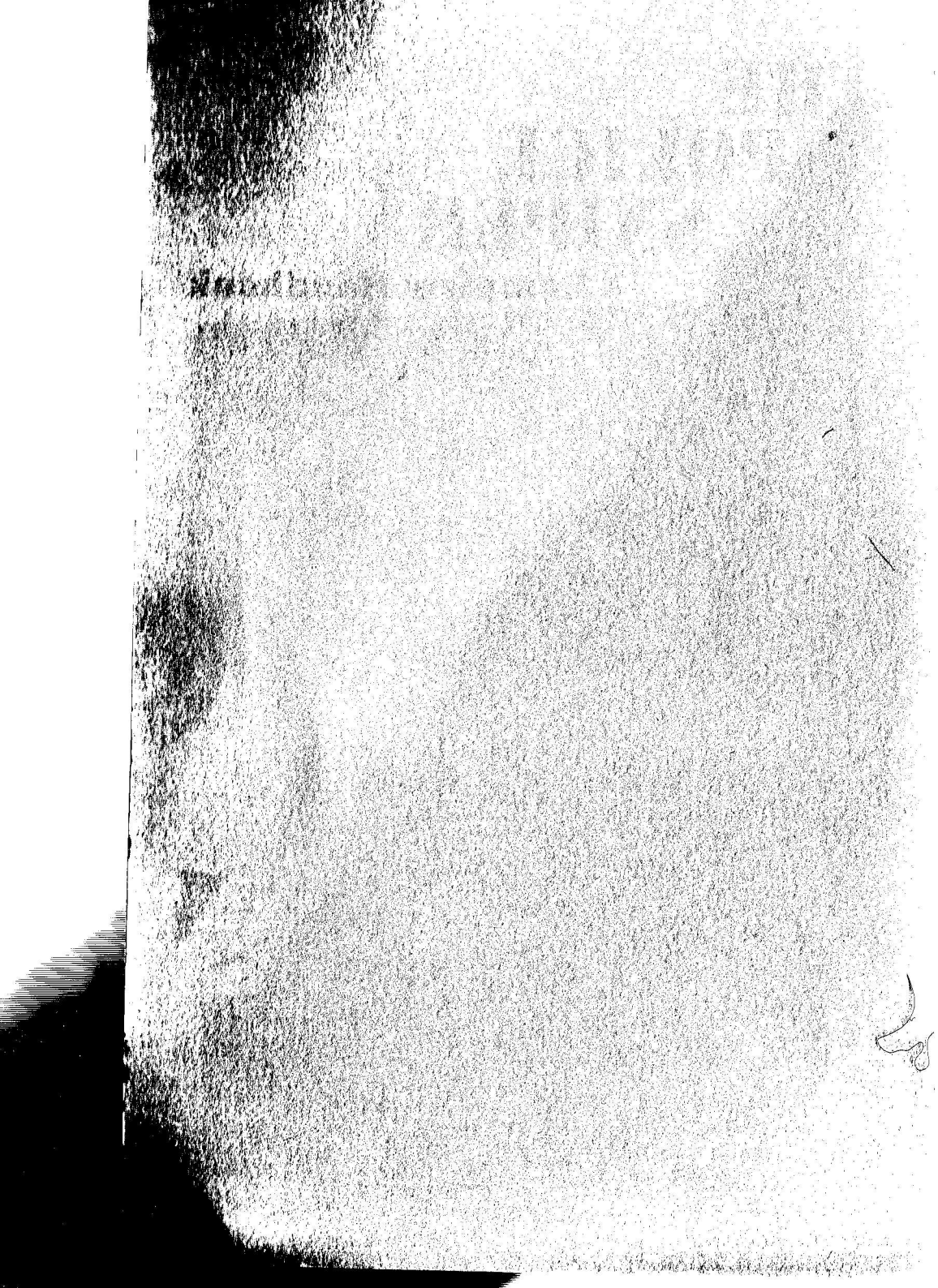
THE POLICE SNIPER

A Complete Handbook



by Burt Rapp



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by Burt Rapp

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INTRODUCTION

There have been some recent books on sniping, but not one tailored to police needs. Reprinted or reworked military texts don't give the police sniper a realistic outline of what he needs to know.

One problem is that much of what's been printed has been adapted from military craft. This approach leaves serious gaps because the civilian police functions and needs are quite different from the all-out warfare practiced by the military. This requires a definite re-orientation and re-planning.

SWAT teams have usually been organized along the lines of infantry squads, rather than conforming to civilian police needs. This is why we see SWAT team members designated as "point" and "rear guard," as if they were about to go out on infantry patrols. This also explains why many SWAT team members still dress in camouflage, although the dominant colors in the city are grays and blacks.

This book will deal with the topic differently from any other so far. We'll first examine the police sniper's role, to lay out what he needs. His duties will determine his equipment and tactics. We'll have to take a quick look at what a SWAT team is and does in order to understand how the sniper fits.

The second part will deal with training and techniques. We'll cover selecting the sniper, basic re-

quirements, and the skills he must have or develop to do the job successfully.

Finally, we'll deal with equipment. This is the least important part of the book, because there are many good rifles suitable for the police sniper, and despite the claims of manufacturers of overpriced and overblown "sniper rifles," superlative precision is usually not needed. Precision is also not necessarily costly.

This discussion won't lead the reader down the path of the high-ticket items. This is a common mistake, made by people who don't stop to think that many agencies don't have budgets to buy superlative and high-priced equipment. In fact, most agencies can get along with much less.

This book will have to generalize in many ways, because it's impossible to lay out a plan or a precise prescription in print that will be suitable for all departments. Small agencies, limited in both manpower and budget, will have to cope in a different way from the large ones. The larger agencies face larger problems, but their equipment and facilities are often the envy of police administrators who have to make do with much less.

It's easy to make up an equipment list when the writer is not the one who has to lay out the money for it. It's also easy to be dogmatic and specify a training day each week for the hypothetical SWAT team. For many agencies, this is impossible, and even monthly training is hard to arrange when the members are on different shifts.

This book also will not make the mistake of dealing exclusively with worst-case assumptions, which is common among police planners, a legacy from our military heritage. With the same outlook as military staffs anticipating a "nuclear Pearl Harbor," some

police planners expect a hostage-taker at 800 yards, who is also equipped with a nuclear weapon which he threatens to detonate if the President doesn't come in person to negotiate with him.

In real life, opponents are far less challenging, and the worst cases rarely, if ever, happen. While it's reassuring to be prepared for the worst, you're far more likely to have to deal with less threatening problems.

We also won't waste time dealing with unrealistic topics, such as leading a target. A military sniper may get the chance to open fire upon an unsuspecting enemy soldier, but a police marksman can't expect a barricaded felon to present himself as a target by strolling out in the open. If the suspect exposes himself at all, he'll be still, holding a hostage as a shield, or he'll rush from one piece of cover to another.

There are certain issues which are "hot potatoes" and police officers are reluctant to discuss them publicly. This is a dilemma. It's a mistake to shy away from difficult issues because of their sensitivity. At the same time, an officer who expresses an opinion on a "sensitive" topic, or suggests a controversial procedure, risks causing a negative reflection upon his department. This could even result in a lawsuit if a situation calling for such a procedure ever comes about. For example, if there's a tacit understanding that a hostage's life is to be sacrificed to prevent the suspect's escape, expressing this in print opens the door to a litigious survivor or relative. For this reason, it's impossible to express thanks to any particular agency or individual, although many intelligent and dedicated police officers helped in the preparation of this text.

The reader will notice certain expressions, such as "manpower," and the use of the masculine pronoun,

throughout this book. This is not an attempt to be sexist, but simply for simplicity. It's easier to write "he" than "he or she." In this regard, females can be as competent snipers as males. We'll cover this more thoroughly in the section on selecting snipers.

MILITARY FIREFIGHTS VS. CIVILIAN ARMED ENCOUNTERS: HOW THEY DIFFER

This is a basic re-orientation for the police sniper who has had military experience. It's necessary because the military's purpose is to take lives and the police try to save lives. In war, prisoners are burdens at best, because they drain resources needed to guard and feed them. Police, on the other hand, strive to bring back prisoners, not corpses, and this objective determines procedures and tactics.

The police officer tries to resolve a confrontation without violence, while the soldier accepts deadly force as the first choice. The police officer who pulls the trigger inevitably has to justify his action to superior officers and sometimes to an outside investigator. He may also have to prove he's not civilly liable.

In war, the objectives are usually to take and occupy territory and to destroy the enemy. If the fighting takes place in the enemy's homeland, there are usually no restrictions on destruction, and any person not wearing a friendly uniform is a target. Enemy civilians can be targets as well as their military. The sniper, however, usually fires at a uniform.

Because the military sniper opens fire at a uniform, anyone in the enemy's uniform will do, although the sniper prefers to "take out" officers. The soldier can fire at a shadow. The police sniper must identify his

target positively before firing. Unlike the military sniper who shoots a private by mistake, the police sniper's likely to be sued or even criminally charged if he kills the wrong person. In the same way, no "reconnaissance by fire" is allowed. The police sniper cannot fire into bushes, rooms, and closets to "clear" them of possible adversaries.

In war, even friendly civilians take their chances. Police officers have the duty to evacuate and safeguard bystanders and other innocent people. Officers re-direct traffic and keep civilians at a safe distance with an "outer perimeter."

Life is cheap in wartime, and both soldiers and civilians are expendable. In civilian life, police officers' lives are not expendable, nor are those of bystanders. Even the suspect has rights.

The military sniper has done his job even if he only wounds his target, unless he has orders to the contrary. A wounded enemy requires medical corpsmen and stretcher bearers to take him off the field of battle. He ties up resources in his care and treatment.

The police sniper's first shot must incapacitate instantly, especially if hostages are present. "Incapacitate" is usually a euphemism for a kill, because there isn't any reliable way, using gunfire, to render a suspect incapable of aggressive action without inflicting a wound that's likely to be lethal.

The military sniper takes shots at ranges of many hundreds of yards, and military sniper rifles have scopes suitable for extreme ranges. By contrast, ranges in police work are usually much closer, as we've seen.

The police sniper must always be prepared to make a hit with the first shot from a cold barrel. In a civilian

setting, there are no warm-up or sighting shots allowed.

The police marksman's shot must strike only the intended target. When a military sniper fires, a bullet which passes through his target and wounds someone else causes "collateral damage." This is not usually allowed in civilian life. The only possible exception would be two suspects standing in line.

This brief review shows why the military approach to sniping isn't directly applicable to civilian police objectives. While the officer with a military sniping background may be an excellent recruit for a similar role in a SWAT team, he must understand that his role will be very different from the one he filled in the service.

This is why police officers cannot be free with their firepower, but must exercise restraint. It's the responsibility of the police to evacuate as many bystanders to safety as quickly as possible.

The problem of innocent people endangered by gunfire is actually two-fold. The police must be careful not to wound innocents themselves, but they also have a responsibility to prevent the suspect from injuring anyone else. If the suspect is firing wildly, this makes the situation urgent.

HOSTAGES

Hostages are more readily available to the suspect, if he so wishes. Because of the nature of the city, and the population crush, there are likely to be potential hostages within reach, as when a supermarket stick-up is interrupted. The presence of hostages makes resolution by negotiation more important than otherwise.

THE MEDIA

The media are almost always present when a situation "comes down." This requires officers to keep media representatives at a safe distance.

LIFE IN THE BIG CITY

SWAT operations in the city are different from both rural policing and military urban combat. A different set of rules applies, and previous experience isn't

sufficient preparation. The environment is so different that officers must take special precautions and prepare for the unexpected.

NOTES

1. *SWAT Team Manual,* Robert P. Cappel, Boulder, CO, Paladin Press, 1979, p. 21.

SNIPING IN OPEN COUNTRY: THE RURAL ENVIRONMENT

This is unfamiliar to anyone brought up on city streets, but more like the situations covered in infantry training in the armed services. Woods and open countryside can affect the situation strongly, as terrain largely determines tactics. The police sniper, however, cannot revert to any military experience he's had, because "fire and maneuver" won't often solve the problem.

There are several features of rural SWAT operations that strongly affect the picture:

BACKUP AND SUPPLIES

Help and reinforcements are often far away, and response time can be hours. A negotiator may not be available when needed. Medical help may be an hour away by air, and several by road. The rural officers must be more self-reliant, and in practice they tend to carry more equipment and supplies with them than their urban counterparts.

Any supplies you have will be what you bring in with you. If you get hungry, you won't be able to send down to the corner for a pizza. You'll be munching on a Granola bar, if you remembered to bring some.

LONGER RANGES

Ranges are often much greater because of open fields. Buildings are far apart, and usually not built in wooded patches.

RUGGED TERRAIN

Because roads are few, it may be necessary to leave vehicles and move in on foot. It may be necessary to park vehicles many hundreds of yards away to protect them from gunfire.

QUIET

Although the country has its own repertoire of sounds, they tend to be soft and rustling. Foreign sounds such as clicks and rattles tend to carry. This is why a suspect or officer can betray his location by the noise from keys, pocket change, and weapons.

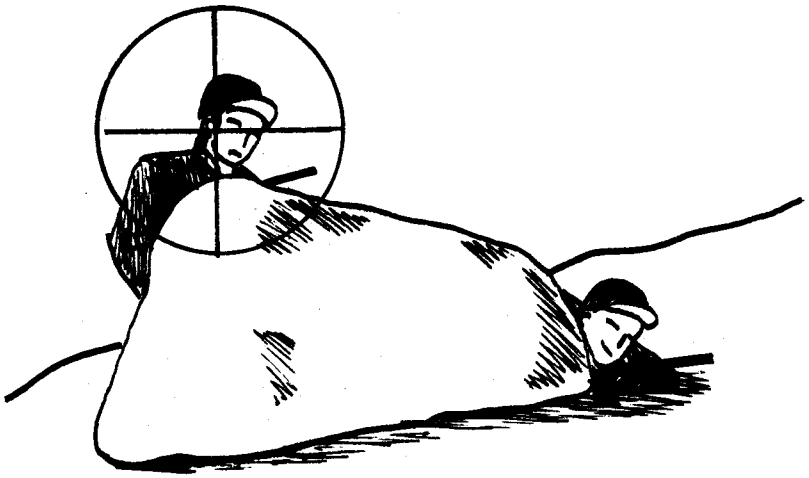
WEATHER

Exposure to weather can be a problem if it rains, if it's too cold, or if it's too hot. Shelter isn't as commonly available as in the city, and you can't duck inside a doorway or take up a position in a room.

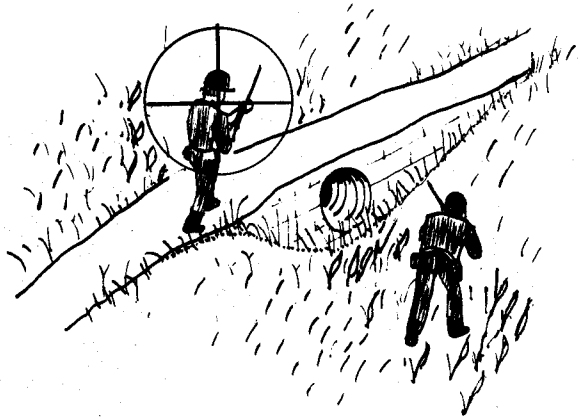
COVER

Cover is equally important, but can be sparse. In rolling country, you can find "dead ground," shallow

depressions that hide you from the suspect's position. There might be only a foot deep of dead ground, but it's enough if you're careful.

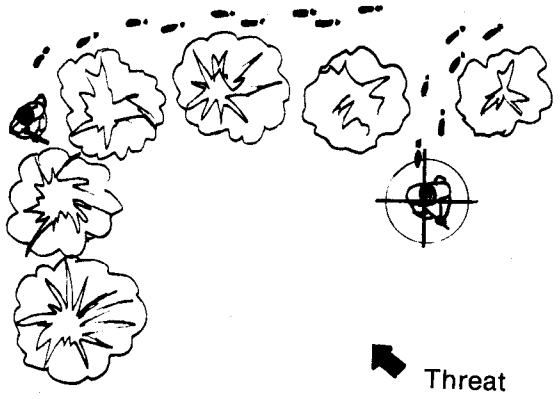


A large rock can provide cover. Just remember to stay low behind it, and not peer over the top where you can be silhouetted against the sky.

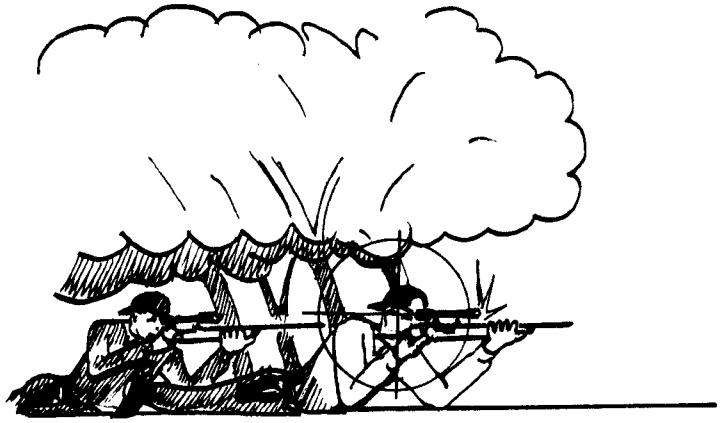


Go under the foot-path, into the culvert, rather than expose yourself.

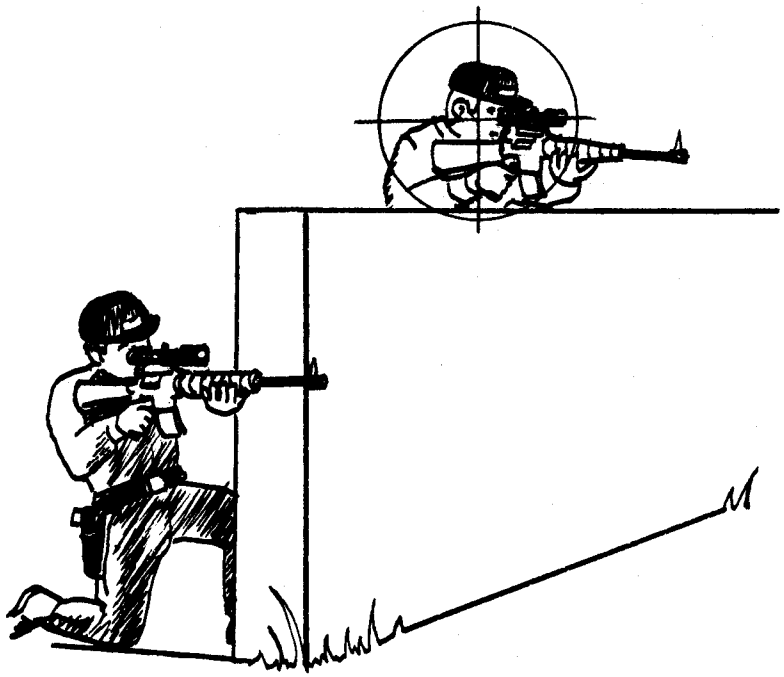
Woods can be protection. Large tree trunks will stop rifle bullets. A rule, if the tree's large enough to hide you, it's large enough to provide cover.



Don't cross an open field. Instead, follow the line of the trees around it.



When taking up a firing position, stay under the bushes, well in the shadows. Keeping to the shadows will also help avoid reflections from your scope sight and eyeglasses, if you're wearing them.



Shooting over the top of a wall or fence isn't smart. This silhouettes you against the sky, and exposes you much more than necessary. Instead, stay to the shadows beside or under the fence.

SWAT MISSIONS

The procedures and tactics to use will depend very heavily upon the situation and the type of suspect. A SWAT unit is basically a reactive force, sent in to solve a problem after it's in full spread. In certain rare instances, such as VIP protection and monitoring public demonstrations, the SWAT officers will be on hand to prevent potential problems by their presence, and to cope with them if they occur. Let's look at the three main types of situations to see how a SWAT team might be best employed, with particular attention to the role of the police sniper.

CROWD CONTROL AND PUBLIC DEMONSTRATIONS

This sort of situation can be very explosive, and the police commander usually recognizes the need for a light touch. There have been instances in which heavy-handed actions by the police have touched off violence, and it's important to avoid the appearance of a "goon squad." In a situation which isn't violent, patrol officers should man whatever barriers have been put up and work to direct the crowd or parade in a safe direction. The SWAT team should be kept out of sight, as a reserve force, in case of need. The SWAT officers should be ready to deliver chemical

munitions if needed, and the sniper should be prepared to "take out" armed members of a mob upon the order of the commander.

Two points need emphasis:

One is that the SWAT team deploys only upon the order of the commander, and that it usually will work best if kept behind the main police line. The team is the last resort, especially in regard to the way a SWAT team is perceived by the public. Until the team is needed, it should remain in its vehicle, or in borrowed premises, where it won't be seen as a "provocation." The role of the media is paramount here, and a threatening presence by the police at a non-violent demonstration can seem unduly repressive. The TV cameras may show a peaceful crowd and quickly pan to a line of masked and armed SWAT officers on the six o'clock news. This is unquestionably a failure in public relations, and can only harm the image of the police and the SWAT team.

The second point is that it's rarely necessary or justified to open fire on a mob. Typically, a rioting mob is violent, but unarmed. Chemical weapons are usually enough to regain control.[1] In a few instances, some members may have guns or fire bombs, which justify deadly force. To be able to "take out" such suspects, the police sniper should be pre-positioned on high ground if possible. This places him apart from the rest of the team, and makes the use of a radio mandatory. In this special situation, it's also vital to have a second person with the sniper. This can be an observer, or a relief sniper, or simply a close cover officer to protect the sniper. This also provides a second radio as a back-up.

VIP PROTECTION

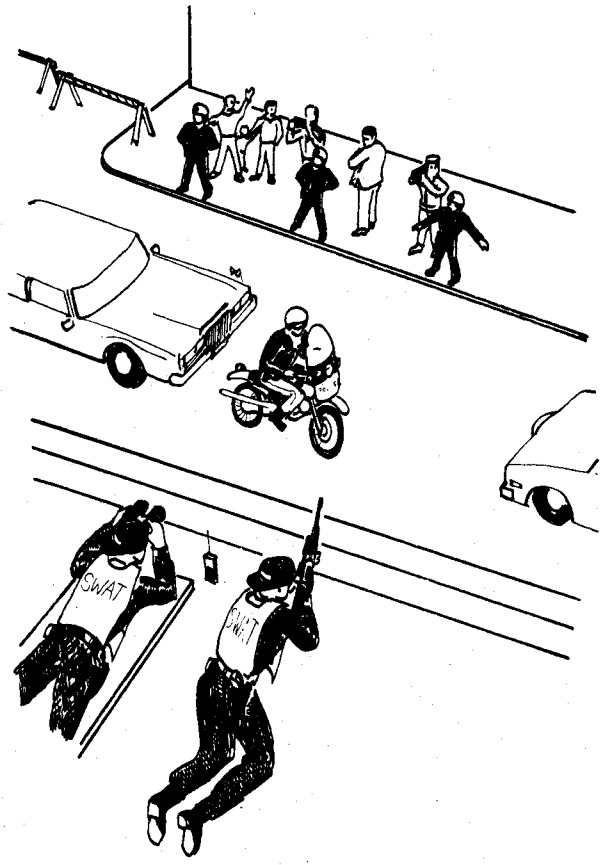
Escorting VIPs is a special task for which SWAT teams are usually well-employed in a supporting role. The protectee has his own team of bodyguards with him for close protection. They always stay with the protectee, and work what is called the "inner perimeter."

The theory and practice of close protection is simple. There are two functions to be served: avoiding or escaping the threat and arresting the perpetrator. It's impossible to place an iron ring around the protectee. Instead, protective officers depend upon concentric screens to block or parry threats. The inner team always stays with the protectee, attending to his safety and his evacuation, if necessary. The outer screens of officers are the ones in contact with crowds, and are the ones who react to a threat by moving in on the attacker and neutralizing him. "Neutralizing" can mean physically overpowering the attacker, if he's within reach, or shooting him.

The sniper has two functions in the protective role. He observes the entire area, and gives warning of a developing threat. He also neutralizes a sniper assassin who is within range. The best position for the police sniper, therefore, is on the highest ground that will cover the area of his assignment. Positioned on the tallest building, he can observe the rooftops of other buildings below him.

Because diligent observation requires scanning 360 degrees, and because it can be fatiguing, it's best to assign teams of two or three snipers to each position, if the manpower is available. If not, a sniper and an observer can serve the purpose. The second

officer can relieve the sniper on the binoculars, which helps postpone fatigue. The sniper will open fire if the situation demands it, while the second officer will man the radio to keep communications open.



The sniper assigned to VIP protection has to show independent judgment. Standard procedure for the first protective agent to see a threat is to react and call it out to alert others, simultaneously. Because of the sniper's role, the only effective reaction he may

have to a threat is to open fire. In this context, "threat" means a deadly threat by an assassin, not just an unauthorized person in a restricted zone. If it becomes necessary to shoot, the sniper's partner should call it out on the radio. This is essential so that the close protection agents can decide whether to begin evacuation or to "maintain" and shield their VIP. Seconds count in an assassination attempt, and there must be no delay.

THE BARRICADED SUSPECT

This is the most common situation. A barricaded suspect doesn't always fit easily into the category because there are many variations, depending on the situation, the suspect, and local police practices.

In certain instances, SWAT team members routinely accompany an arrest team to the site if it's a "high-risk" arrest. This is to prevent the situation from deteriorating and turning into a barricaded suspect crisis. The deterrent effect of armed SWAT team officers often persuades a suspect to surrender quietly.

When the crisis has already deteriorated into a "barricade" problem, there are several options available:

The simplest is to wait it out. This sometimes works. If and when the suspect thinks over his choices, he may decide that the best chance of survival lies in surrender. If negotiations are underway, waiting while containing the suspect can be fruitful. If this doesn't work, the force level can escalate.

Tear gas is the next step. This is a fairly simple technique and often works, but there are a couple of

points to watch. If there are hostages, gas won't incapacitate the suspect quickly enough to prevent him from killing them.

The next step is to accede to the suspect's demands, if policy or other considerations allow this. In many cases, there will be excellent reasons for skipping this prospect. This brings us into the area of lethal force. The commander may give a "green light" on the suspect, or he may plan a forced entry if no other choice is possible. A forced entry may be necessary if there are hostages. In all cases, the police sniper will have a role to fill.

NOTES

1. *Kill or Get Killed,* Rex Applegate, Boulder, CO, Paladin Press, 1976, pp. 360-362.

SWAT TACTICS

To understand the place of the sniper, it's basic to lay out what the SWAT team does. A SWAT team is useful in a variety of situations. In most, it's best to think of the functions a SWAT team must perform. This is where we depart from accepted practice of describing functions in military terms. A police operation doesn't follow the procedures of military small-unit tactics. Instead, there are certain functions to serve.

CONTAINMENT

"Containment" means to take over from the first officers on the scene and to continue the surveillance of the area. It's also necessary to prevent the escape of the suspects and to avoid injury to innocent parties. Containment also means blocking the escape of the suspect by physical barriers or by fields of fire.

PERIMETERS

We usually think of containment as having at least two perimeters, an inner one facing the suspect and an outer one facing the crowd, if any. The members of the inner perimeter place themselves to have a

good view of the premises, while keeping behind cover, and to have good fields of fire. These are usually SWAT officers. The outer perimeter takes care of crowd control, evacuation of innocent parties, and other miscellaneous duties.

In this regard, some favor "invisible deployment." This means having the team members move to their stations without being seen by the suspect. This may or may not be possible. It may not even be necessary, if the suspect hasn't shown any violence towards police officers. It's important to keep this in mind because sometimes the SWAT team is called because of potential, not actual, violence.

Another factor to consider is the intimidating effect of the suspect's observing the SWAT officers moving into position. This can cause him to reconsider, and realize that surrender is preferable to facing this heavy-duty threat to his well-being.

CROWD CONTROL AND EVACUATION

It's obvious that bystanders cannot be allowed to wander into possible fields of fire. It's not often easy to keep innocent people safe. It may be necessary to close off a street and re-route traffic. It may also be necessary to evacuate buildings. There's hardly a tactical team in the country with enough man-power to do this, and it's usually necessary to call upon patrol officers to help.

There's often a need to combine functions, because in cities it may be necessary to evacuate innocent people from a building while SWAT officers are moving in to use it as an observation or command post, or a sniper's post.

BARRICADED SUSPECTS

There are many tactics possible when dealing with a barricaded suspect. In many instances, the prelude is to employ a negotiator. Former Captain Frank Bolz, of the New York City Police Department, found that it was possible to resolve many barricaded suspect situations without violence by de-fusing them through negotiations.

NEGOTIATIONS

The purpose is to resolve the problem without violence. The method is to discuss it with the suspect and try to persuade him that surrender is in his best interest. This isn't always possible. Some suspects are irrational. Others are political or religious idealists and eager to die for the cause. In other instances, the suspect's demands are impossible to meet. It should become apparent early in the negotiations which way the situation will go.

Negotiation policy will vary with the department. We find the "soft" vs. the "hard" approach. The soft approach is to let the suspect have what he wants, in order to save the hostages' lives. The hard approach is to pretend to go along with the suspect's demands, but under no circumstances to let him get away. This is the policy that many agencies are reluctant to put in their manuals because of the prospect of a lawsuit.

Who can be a negotiator? There are several theories. Some claim that a "father figure" is best. Others say that a sympathetic contemporary is better. In all instances, the negotiator should have gone through a training course to prepare him for the task.

Negotiations can be by bull-horn, but preferably by telephone. The telephone offers privacy, and there will be an effort made to provide a telephone if the suspect doesn't have one.

The negotiator has another function, to play for time by introducing delays in the process. This is why the negotiator must never be the police commander. If the suspect makes demands, he must never get a direct or speedy answer. The negotiator always replies that he'll have to ask his commander, who is never available to negotiate directly.

Spinning the negotiations out has several purposes. One is to gain time to gather information and to plan, in case an assault becomes necessary. Another is to gain information about the suspect, as much as he's willing to divulge about himself. This gives the negotiator a "reading" on him, and enables forming an opinion regarding whether he'll surrender or not.

Another purpose is to set him up for an assault or an ambush if this becomes necessary. This tactic is for situations in which there's little or no hope of resolving the problem otherwise. It might be workable, for example, to promise the suspect a vehicle to get him out from the protection of the building.[1]

Yet another purpose is to tire him. Fatigue impairs judgment and reflexes. It also wears down an emotionally over-wrought suspect, and provides a better opportunity for "talking him down" and persuading him to surrender.

The suspect will perhaps start with demands. If he doesn't, the negotiator is likely to try for a trade of some sort. He may offer food and drink in return for a concession. One important purpose, if there are hostages, is to gain their release. This may not be

possible, but the negotiator will try to get at least one hostage released because a hostage can reveal important information about the suspect and his situation when debriefed.

There are generally two prohibitions in negotiations. The suspect must not be given weapons, nor additional hostages. In some instances, a police officer may trade himself for a hostage, but this is rare.

If food is part of the deal, it's almost futile to try to place drugs in the food. The suspect's likely to feed the hostages first as a precaution.

Promises made to the suspect during negotiations are not binding. This is both a moral and a legal point. If the police negotiator has to promise the suspect a million dollars and a jetliner to obtain release of the hostages, the police commander may renege at any convenient point. The negotiations can also be for the sake of gaining time to prepare an assault.

OBSERVATION

If negotiations are underway, the police commander will expect the snipers to keep the site under observation and to report any changes. This is valuable information for both negotiations and for assault planning. In some situations, the sniper will have a good view. In others, there may be almost nothing to report. A variable-power scope sight is valuable for observing because the power can be cranked up for close viewing.

Because the siege may last for hours, it's important to have a relief. Close observation through an optical instrument can be very tiring, and fatigue can

seriously degrade the sniper's skill when it's most needed.

As a sniper, you should always be aware that you may be required to "take out" the suspect at any time. You should be familiar with the suspect's face, not just his clothing. There have been reports of suspects changing clothes with hostages.[2] You may be the first to notice this and report it, if you're awake and aware.

ASSAULT

This can come about because of a failure in negotiations, or because the negotiations were conceived from the start as means of gaining time. There are certain pros and cons to the assault.

If there are hostages involved, it's important to know that the assault tends to worsen their chances of getting out alive. A study of sieges in Europe showed that more hostages died when there was an assault to release them than when the suspects surrendered. 14 hostages out of 390 died when there was an assault. Only 5 out of 203 of the hostages lost their lives when the suspects surrendered.[3] This study pertained to political terrorism, and we can't assume that it applied to all hostage crises.

Assault is particularly dangerous if the target is a "rock house," a specially-fortified house used by motorcycle gangs and drug distributors. A "rock house" is a solidly built building with reinforced walls and doors. There may be steel plating behind each wall, iron grill-work covering each window, and a barbed-wire fence to deny access to the premises. In some instances, attack dogs stand guard, and if the

occupant has the means and the will, explosive booby-traps also guard the way.

In extreme cases, such as "rock houses," entry is unwise unless there are hostages which must be rescued and no other choice exists. If only suspects are occupants, shooting CS into the premises is one way to start. If the suspects don't come out, a safe assumption is that they've got gas masks and other equipment which can make them formidable opponents in a shoot-out. An entry is out of the question, and bullets won't make much of an impression.

There are some types of tear gas grenades which heat up to prevent throwback. These are the burning type, and the manufacturers caution that they can start fires. Throwing or shooting a few into a rock house can be decisive in forcing the occupants out. In extreme cases, it's important to remember that if the structure is gutted by fire, it will be impossible for fire marshals to determine whether a broken bottle of gasoline was already on the premises or thrown in with the gas grenades.

THE FORCED ENTRY

Although kicking down doors has gone out of fashion because it's so risky, the forced entry still has a place in SWAT tactics in certain circumstances. The procedure is far more complicated today, because of increased sophistication on both sides. The prospect of liability is also a very important factor.

Before entering, there must be solid information about the interior layout and the occupants. This can come from studying floor plans and interviewing residents and employees. If any hostages have been

released, they can provide up-to-date information on the suspect and any changes he's made in the interior arrangements. It's vital to know this. The sniper can help if he can peer through a window to observe the interior. If he can draw a map to illustrate his observations, it will help the entry team.

Any entry team must anticipate that the suspect is not totally stupid. If he has even the most basic tactical sense, he'll have the door blocked and the curtains drawn. If time allows, and it usually does, he'll have placed obstacles to impede any entry. While explosives usually can breach a door and any barricade behind it, the entry may be booby-trapped by pieces of furniture strewn about, such as chairs with the legs up to impale anyone who dives into the room. This is why the "commando" tactics seen in books and at SWAT exhibitions are mainly for show, not for real. Entry against determined opposition is very risky.

The entry team should be as small as possible. "Lean and mean" is a better idea than large numbers who fall over each other. The team should rehearse the entry and the path each member will follow upon entering. This is a vital step, because a careful rehearsal helps each member understand where the others will be and to avoid firing in their direction. It also shows which members are in the best positions to deal with various threats that may develop inside.

A standard practice for the entry team is to open fire on anyone inside who has a weapon. The assumption is that the suspects will be armed, and the hostages won't. However, it can happen that a hostage may make a lunge for a suspect's weapon once the assault starts, and be mistakenly shot by his rescuers. Some entry team members simply write this

off as an inevitable casualty of operations, calculating that the hostage would probably have been killed by his captors, anyway. This is an unnecessarily negative viewpoint, because there are some steps which can minimize the danger to hostages.

One is observation before the assault. Entry team members, time permitting, can observe the suspects and hostages from a vantage point to memorize their features. A technical aid for this is the television camera with fiber optics extension. This device allows inserting the probe through a hole in the wall to get a television screen image of the room and its occupants.

Stun grenades, thrown in just before entry, can incapacitate everyone in a room by the flash and bang. However, these aren't quite "non-lethal" weapons. It's more true to say that they're "less-lethal," because they can kill if they detonate too close to the person. The sniper can help in this regard, by advising the entry team of the locations of suspects and hostages so that they know where to throw the grenades.

There are several ways of breaking down doors to allow a quick and violent entry:

The battering ram, although simple and common, is mainly useful for breaking down doors when the entry is unopposed. If there is a hostile gunman behind the door, the officers working the battering ram are in his direct line of fire. By firing straight through the door, he can hit several of them before they can react and get out of the way.

Explosive entry is another method, and one that can blast a hole through a wall as well as a door. There are several materials for this, including "Primacord" and linear shaped charges. Primacord works well against wooden doors. Linear shaped charges

have much more cutting power, and can breach steel doors and masonry walls.

A "thermal lance" is a "burning bar" with a hole to allow a flow of oxygen. Depending on the model, temperatures can reach several thousands of degrees, enough to melt any metal. A thermal lance is useful for silently burning locks or hinges off a door or gate. The main problems with thermal lances are that the burning bars don't last long before they consume themselves, and the equipment is heavy.

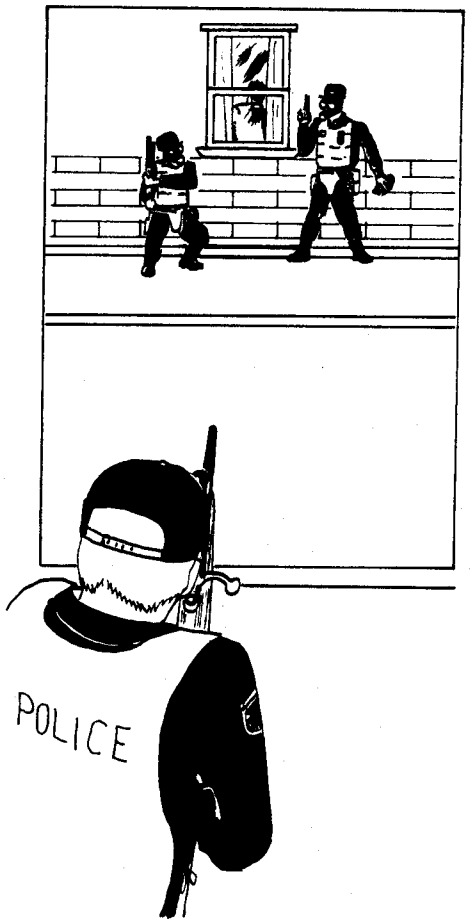
A non-explosive and non-burning device for a quiet entry is the "Jamb Spreader." This is a hydraulic jack that spreads the door jamb, bringing the door-locking bolt out of engagement. The Jamb Spreader is useful only for a stealthy entry, such as breaching the rear door while a distraction is going on at the front. The Jamb Spreader costs about $400.00 and is available from:

OMNI CONCEPTS, INC.
1056 Taylor Street
Vista, CA 92084
Phone: (800) 552-9255
Attn: Linda Bennett

An important point regarding forced entries is coordination with the sniper. The sniper may be in a position to report on events inside, and can advise the entry team. The suspect may have to go to the toilet, for example, and this would be a good moment to strike. Even if there are several suspects, having one of them out of action for a few seconds can provide an advantage.

The sniper can also "take out" one or more of the suspects through the windows. Even with multiple

suspects, neutralizing one or more of their number can provide a tactical advantage.



Another way the sniper can help an assault team is by firing a distraction shot through a window on the other side of the building. This can draw away the attention of the occupants long enough for the assault force to gain surprise.

INTEGRATION

The sniper's tactics must be integrated with those of the rest of the team. Although the sniper may play a pivotal role in the effort, his role is to act as part of the whole.

NOTES

1. *Sniper Counter Sniper, A Guide For Special Response Teams,* Mark V. Lonsdale, Los Angeles, CA, Specialized Tactical Training Unit, 1986, p. 149. Lonsdale considers whether the negotiator should be told that his role is to set up the suspect, and advises against it.
2. *Sniper Counter Sniper,* p. 145.
3. *Contemporary Terrorism,* Edited by William Gutteridge, Facts on File, NY, 1986, Clive C. Aston, "Political Hostage-Taking in Western Europe," pp. 57-83.

THE POLICE SNIPER'S ROLE

The sniper performs several tasks which complement each other and help resolve critical situations. Moreover, the sniper may have several jobs. Unless he's a member of a large-city full-time SWAT team, he'll have his primary job in patrol, traffic, or other function. On the team itself, he'll doubtless be cross-trained on another function, so that he may fill in if needed. He may be an entry team member, or fill whatever role the commander requires.

THE SNIPER'S ROLE

Because the police sniper has a telescopic sight, he's better equipped to observe a suspect than an officer who must observe with the naked eye. In some situations, the sniper will only have to observe and report.

Although the object of deploying a SWAT team is to resolve a crisis without loss of life, sometimes death is inevitable. It may be necessary to take a suspect's life to save an innocent one.

He may have to open fire on a barricaded sniper. The well-known "Texas Tower" incident of 1966 was a good example showing the need for counter-sniper work.

The sniper may have to coordinate with an entry team or cover an advance. Both tasks require close knowledge of what the others are doing.

HOW THE SNIPER OPERATES

Manpower availability, more than tactical requirements, will determine how the sniper works. Ideally, he should be paired off with another sniper or an observer, but this luxury isn't always available.

The sniper, like other team members, is "on call" 24 hours a day, 7 days a week. This imposes limitations on travel. After the shift ends, and on week-ends, he must be within reach of a call-out. There's usually a standard set for response time, and he must remain close enough to respond within the limit. The sniper, too, is subject to the limitation that no more than a certain number of the team may be on vacation or otherwise unavailable at any time.

This requirement also dominates personal behavior. The sniper must be prepared to go on a callout fit for duty at any time. If he's just gotten home after a tiring day on patrol, and is sitting down to dinner, he must go if the phone or pager ring.

How much can he drink? He may still be fit to drive if he's under the legal limit, but will he be fit for the demanding duty of a life-and-death confrontation? Will his skill in pin-point marksmanship suffer? Always keep in mind that the sniper's actions may be reviewed in a courtroom one day. His superior's action in allowing a sniper "under the influence" to come on duty will also count.

Another important point is fatigue. Maybe you can stay up half the night and feel that you're not really

impairing your skills because you're not drinking alcohol. Don't bet on it. Fatigue can wipe you out as well as booze. It creeps up on you. You may not feel it at first, but you won't be quite as sharp as you were a few hours ago. You may not be able to see as well, and your hands may not be as steady.

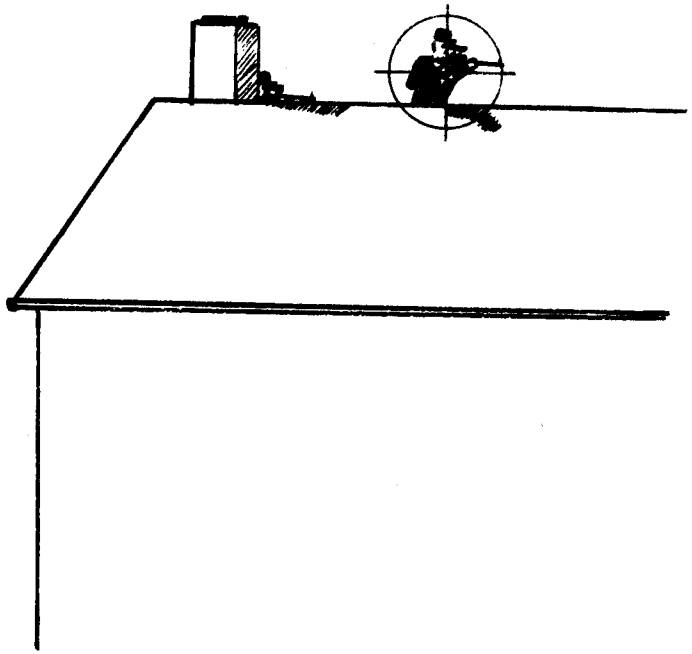
There may be a limit to the number of years police officers can remain on a SWAT team. In practice, there's always turn-over. Some move out of the team upon promotion, because of agency policy. Others are "burned out," or their families are. If there are several call-outs a week, wives may object. There may be personality changes after a deadly encounter. This is unfortunate, but it sometimes happens. The subject of "post-shooting trauma" has gotten a lot of attention recently, but it's not as common as the magazine articles suggest. The likelihood of this happening can be cut down by careful personnel selection.

The SWAT team commander will have to decide the composition of the teams that have the "take-home" cars. Should the sniper be paired off with another sniper, or should he be part of a mixed team, on the grounds that one team may be all that's available on a callout? A two-man team seems terribly inadequate for handling all of the tasks that SWAT teams perform, but if the nearest reinforcements are an hour away, there's no choice. At least, they can hold the perimeter until more help arrives.

SELECTING A SNIPING POSITION

In principle, the sniper should be on "high ground," dominating the surroundings. In rural areas, this means a hilltop, a high tree, or the upper story of a

barn. In the city, the sniper should be on top of the tallest building in the area, or at least in a position to dominate the inner perimeter. The exact position depends on the task. If a suspect's holed up in an apartment on the tenth floor, it doesn't pay to put a sniper on top of a nearby thirty-story building.

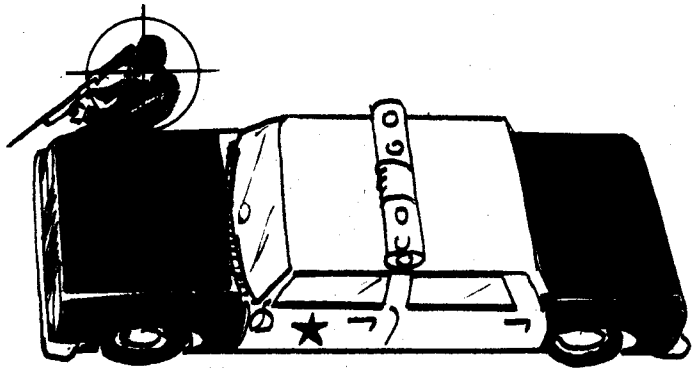


The wrong and the right way to make use of a rooftop position. Allowing yourself to be silhouetted against the sky makes you a target. Instead, try to blend in with the chimney. It's better yet if the sun is casting a shadow to help hide you.

The advantages of high ground are that the sniper can over-look objects that otherwise might be used as cover or concealment by the suspect. In both rural and urban environments, there are areas of "dead ground" that can serve as cover, but a high viewpoint nullifies this advantage.

The sniper must be aware of his cover and his concealment. In many cases they go together. "Cover" means protection from gunfire. This term is flexible, not absolute. Here's why:

What sort of weapon does the suspect have? If it's a handgun, caliber .38 Special or less, a car body will probably give enough protection to be called "cover." Few such rounds will penetrate both doors of a car, but if the suspect has a rifle, only the engine block will stop the bullets.



It's important to keep the effects of high ground in mind when facing a suspect who is on high ground. If you're down behind a car, for example, you'll find that you're not as protected as you think.

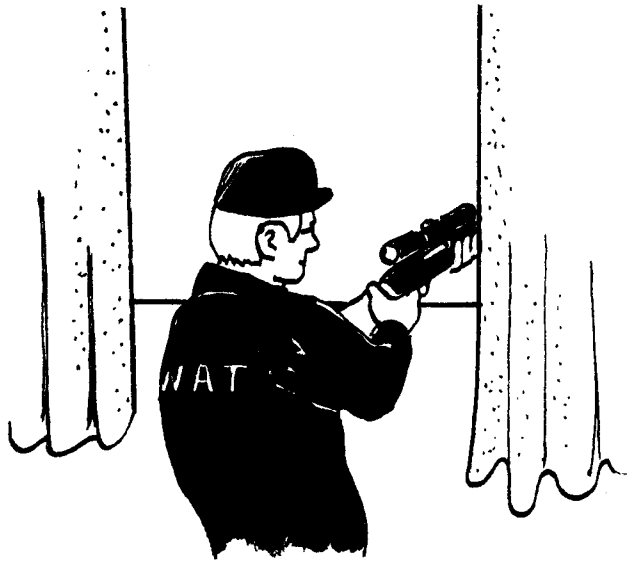
A building's walls may or may not be cover. To gain a better understanding of this, take a look at both private residences and commercial buildings under construction. Especially in private homes, what seems to be masonry when completed is merely "stucco," a plaster-like material spread or sprayed on chicken wire or lath. Brick walls will stop handgun

bullets, as will many cinder block walls, but if they have hollow centers, they'll be poor protection against rifle bullets.

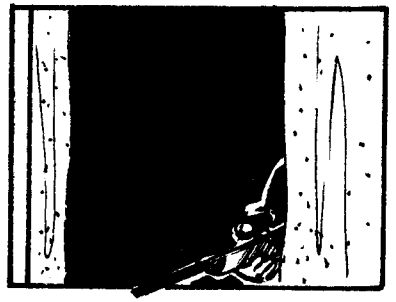
The lesson is clear: don't take any cover for granted. Examine it closely, and minimize your exposure. Tap the wall to check for a hollow sound. Move a piece of furniture against it to give additional protection. You've been issued a ballistic vest. Wear it when necessary. Also use concealment to help protect you.

Concealment is exactly that; shelter from view by the suspect. Concealment doesn't have to be behind a solid object. It can be in the shadows. Rooms offer excellent concealment, but it's necessary to make the best use of what's available.

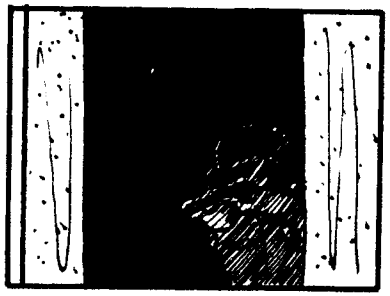
What does the suspect see from his position? If you're half hanging out the window like this, you're vulnerable.If the room has curtains or blinds, make the most of them.



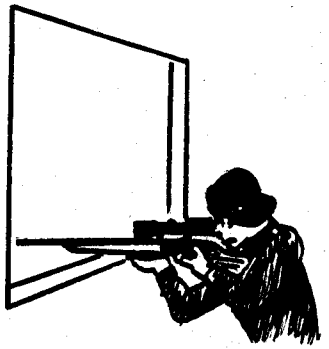
It's foolish to expose yourself like this when there's concealment right next to your shoulder.



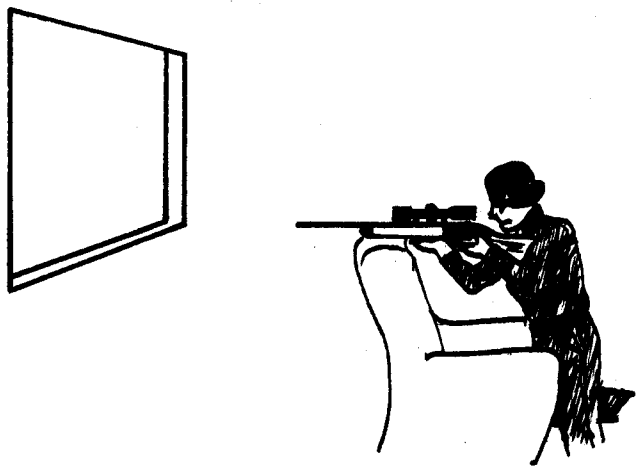
This is better. At least, if you have to get close to the window to look out at an angle, you've got partial protection from view.



This is best of all. Stay well back in the room, taking advantage of the shadow. Your angle of view is narrower, but at least you're not exposed.

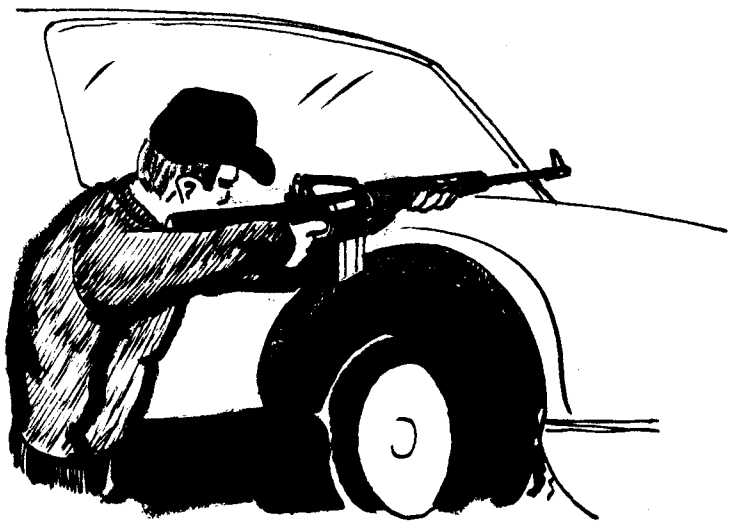


If you have to fire, don't use the window ledge as a rest. You're unnecessarily exposed.



Pick your firing position in advance, and set up the room's furniture to support you. Firing over the back of a couch is better than half-hanging out the window.

What's wrong with this position? First, the car's glass is not bullet-proof. The suspect can send bullets through the windows into your mid-section. You're also too high and too exposed.



This is much better. Most of your body's behind the car's engine block.

When using a car for cover, remember that bullets can ricochet and skid under the car. It's bad enough to have your legs and feet vulnerable, but don't try to lie down under the car!

CAMOUFLAGE

American SWAT teams have been for years wearing Vietnam-era camouflage, of questionable value in cities where the dominant colors are grays and blacks. Whether the camouflage scheme is "woodland cammo" or "tiger stripes," it's only suitable for rural areas. In the city, simple "urban gray" is more to the point.

There is one outstanding camouflage scheme, called "ASAT." This stands for All Season, All Terrain, and comes in two types. One is tan-base, which blends in with woods or desert. The other is gray-base, for urban areas.

The ASAT pattern is both disruptive and color-blending. The dominant colors are the base and black stripes, which produce a very dull effect that's truly hard to see when the wearer stays in the shadows.

Available from:

BRIGADE QUARTERMASTERS
1025 Cobb International Blvd.
Kennesaw, GA 30144
Phone: (404) 428-1234

COMFORT, FATIGUE, AND EXPOSURE

Because the sniper must work at a high level of attention, fatigue comes on more quickly than otherwise. Being comfortable helps. Selecting a comfortable position is the first step. Prone is not always best, because of the strain on the neck. A low reclining position may be better suited for prolonged observation. If there's room to sit, so much the better. Inside a room, there should be adequate furniture.

A shooting mat is essential. This is especially true outdoors, where a good mat provides insulation from cold. A rest for the weapon, binoculars, or spotting scope is very helpful. This is where body armor or a load-bearing vest can serve two purposes. Placing the vest on one piece of furniture and sitting on another will provide comfort and steadiness.

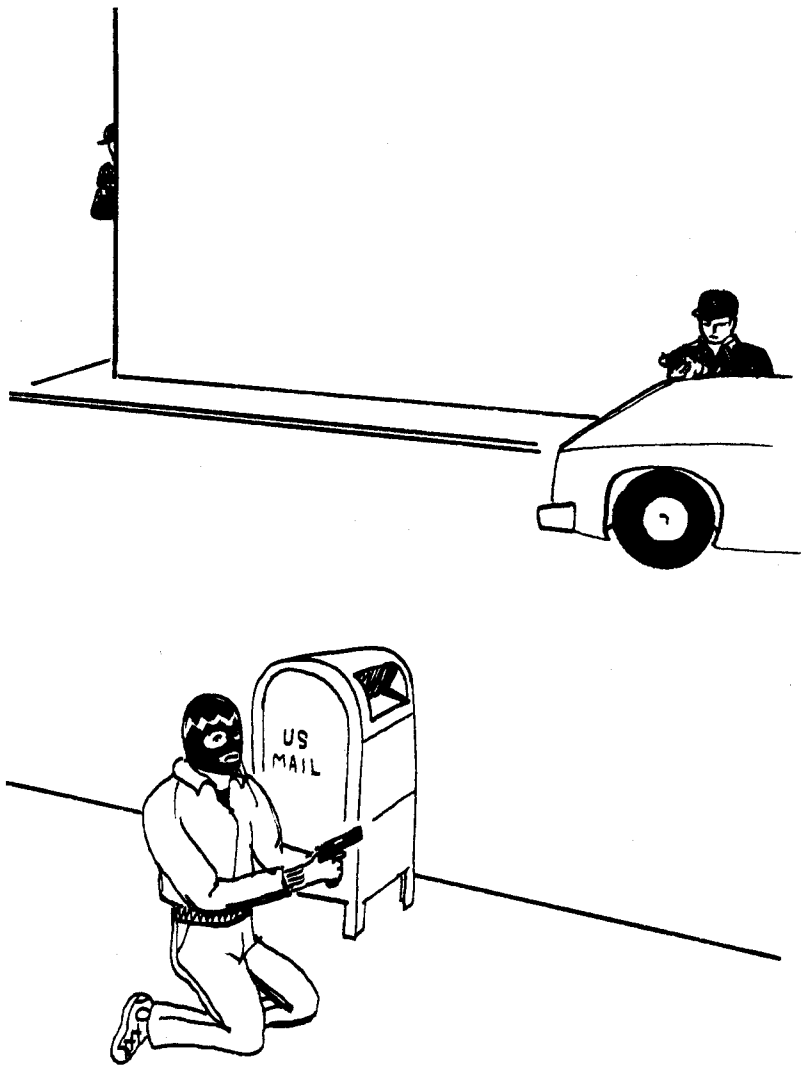
In some instances, exposure can endanger the sniper. Extremes of climate bring on exposure effects. Hot desert and deep cold are equally dangerous, although in different ways. Any sniper who has to take a roof-top position, or stay long in an exposed area, is taking a risk. A blanket can serve as insulation against the cold. A sniper should position himself in the shade for camouflage anyway, and this will give collateral protection against direct heat from the sun.

The commander must be aware of this, and try to rotate the duty as often as possible. If there's enough manpower, he can order the sniper relieved every hour. If this is impossible, he may have to modify his objectives.

FLANKING AND ENFILADING

It's necessary to borrow military terminology to bring out a couple of tactical points. The commander should, if possible, locate his snipers so that the suspect has the least cover and concealment, and the least opportunity to break away. If the suspect's in a building, all windows on all sides should be under observation. If the action takes place outdoors, having snipers on at least two sides will let them take the suspect in a cross-fire.

Moving a sniper down the side to get a clear shot from another direction is called "flanking." This puts the suspect in a tactically bad position. Flanking can bring another advantage. If the suspect is behind a wall, in a trench, or in a corridor, shooting from the side results in "enfilading" fire. This allows him no protection at all, and is very dangerous to him.



Here we see one use of cross-fire. The suspect is behind cover, but can't make the best use of it because he needs protection from two directions. He also has to divide his attention between the two snipers.

COMMUNICATION

There should always be communication between all snipers and the commander. The situation can change with dangerous and dramatic suddenness, and the members of the team should be in contact to best react to any opportunities.

THE GREEN LIGHT

Generally, the commander on the scene is the one authorized to give a "green light" to the snipers. There should be an established policy for this, and the policy should be written, in consultation with the departmental or city attorney. The policy statement should also cover the circumstances under which giving a green light is authorized. This is to avoid confusion or controversy over who has the authority on the scene.

Many departments are reluctant to write a policy on this. Police administrators are fearful of lawsuits, and any written policy can be subpoenaed by the plaintiff's attorney. There is a bigger problem of vicarious liability for the department that does not have a written policy.

If you get a "green light" from your commander, remember that this does not absolve you of responsibility. Be sure of your target. Keep in mind that if there's a hostage, the suspect may have changed clothing with him, and remember to identify your target by face, not just clothing.

Also be careful about information you receive. The police sniper who shot the jewelry store manager in

Beverly Hills a couple of years ago was following a description given him by someone else. Still, the wrongful death is on his conscience.

OPERATIONAL RECORDS

In today's litigious environment, keeping records of operational details is important. These will be necessary to support the police agency's case in court. One authority suggests that the sniper and his partner keep an "operational log."[1] This isn't the best way to handle records. The sniper team is likely to be occupied with other duties. In night call-outs, writing in a notebook risks showing a light to the suspect.

The proper place for the operational log is in the command post. The commander's assistant records all events, orders, and decisions. He's in the best position to do so because of his central position, which means that he can record events in proper sequence and in context.

NOTES

1. *Sniper Counter Sniper, A Guide For Special Response Teams,* Mark V. Lonsdale, Los Angeles, CA, Specialized Tactical Training Unit, 1986, p. 2.

SNIPING TECHNIQUES

Police sniping techniques are quite different from those employed by the military and the shooting techniques used by competitive shooters. This is why the lessons learned from these other fields often don't apply to police snipers. In this chapter we'll cover the fine points of placing the bullet where you want it, and how to find the right point. We'll also take a look at a couple of sacred cows in precision shooting, and see why they don't make sense for the police sniper.

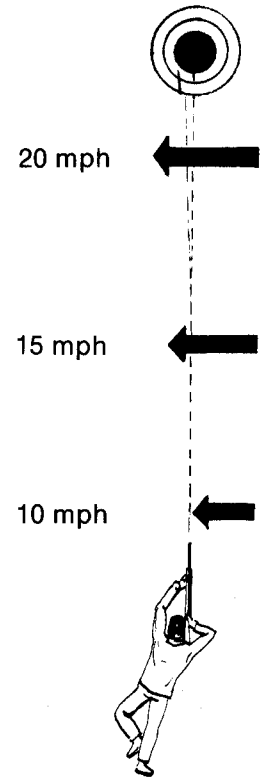
WIND EFFECTS

There's been much written about the effects of wind on a bullet's flight, most of it derived from laboratory experiments and mathematical calculations. We can predict exactly where a bullet will strike if deflected by a wind of a certain velocity. The problem is that conditions out in the field are not the same as in the laboratory or the computer.

Military manuals are full of information on how to "dope the wind." The U.S. Marine Corps textbook on sniping has an entire section, Pages 96-104, devoted to techniques of doping the wind. It lists how to approximate the wind speed:

Winds under 3 mph cause smoke to drift, although you can hardly feel them on your face. Between 3 and 5 mph, you can feel the wind on your face, and a 5 to 8 mph wind causes tree leaves to move constantly. Winds between 8 and 12 mph raise dust and loose paper, and small trees sway when in 12 to 15 mph winds. The manual also points out that a wind from a 45-degree angle has half the effect of a cross-wind.

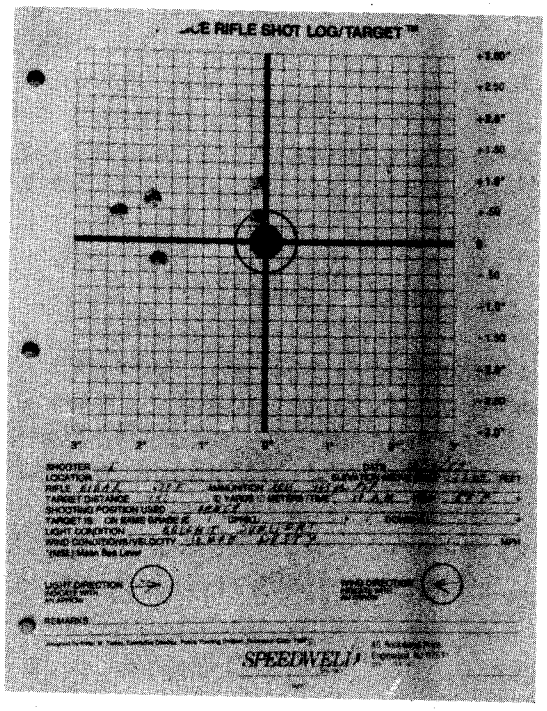
This is enough for military operations. Misses are tolerable. It won't do for police sniping. The reason is the winds at the shooter's position are not necessarily the same as winds down-range. Look at this diagram:



The shooter estimates a 10 mph wind at his position. 35 yards down-range the wind is 15 mph. At 65

yards, it's 20 mph. Placing the shot accurately would require the shooter to observe accurately the signs of wind velocity at each stage and calculate the depth of each wind zone. He'd have to calculate the effect each would have on his bullet and add them up to determine the correct hold-off. By the time he'd finished his calculations, the wind would probably have changed.

Note that this is an over-simplified example, assuming that wind speed remains constant without gusting, and does not include any cross-winds. Let's look at the effect of what appeared to be a 10 mph wind at the shooter's position:



These five shots were fired from a bench, using a high-precision .308 rifle and Remington 165-grain

Pointed Soft-point ammunition. The range was exactly 100 yards. The wind was from the right, and gusty. The shooter tried to fire when the wind was still. Two shots hit approximately on the center-line. Two were deflected 1¾" to the left, and one went over 2¼" left. This sort of accuracy would have been barely enough for a good head shot at that range. The shooter would have been sure of the deflection caused by the wind only after having fired and seen the impact. Would you care to take a head shot at that range if someone's life depended on your shot?

ONE RIFLE-ONE MAN

This belief carries over from competition shooting, where each competitor has his own weapon, finely tuned to his needs. The reason is that each shooter tries to do his absolute best, and tiny differences in weapons can make a difference in shooting. Matches are won or lost by tiny margins, and each shooter is trying to beat all of the others. Being "good enough" isn't good enough. It's necessary to be the best to win.

In police sniping, it's often good enough to be "good enough." As we'll see shortly, it's not necessary to hit exactly on the aiming point, even when going for a brain shot. In practice, this means that hitting a three-inch circle consistently at one hundred yards is "good enough" for this hypothetical incident. The three-inch circle establishes a threshold.

When there's a threshold, anything better is useless because it doesn't increase the "score." The implication of this is that it may be permissible for two snipers to operate with one rifle if the situation requires it. This can be important in some circum-

stances. A rifle can become inoperative. A sniper can see it slide down a sloping roof to the cement fifty feet below. This can force two men to share one rifle.

To test whether two snipers have any hope of working with one rifle, we set up a Speedwell "Hostage" target at 100 yards. One sniper took a head shot in bright daylight. The second sniper, who had fired the rifle before, had complained that it was not zeroed to his eye. He took his shot, which hit exactly one inch from the first one. The second shot, which could have easily lost the shooter a high-power rifle

match, was close enough to do the job perfectly under these conditions.

Run your own test with your partner to see how much of a margin of error creeps in when using each other's rifles. Fire at 100, 200 and 300 yards. This way, you'll know definitely what you can do in varying circumstances if you have to use one another's weapons.

RANGE

This has two aspects: estimating the range and hitting at that range. In the city, estimating the range is easy. You know the length of a city block in your locale. You should also know the average width of a city street, and the spacing between light poles. These figures will help you estimate the range to your target very closely.

In rural areas, range estimation is an art more than a science. If you have a map, you can use that to determine the range. The most useful type of map is a U.S. Geological Survey Map. These are topographical maps showing terrain features to scale. This allows very precise calculation of the range between yourself and your target if you can read a map and identify features.

If you're familiar with the terrain, you may already know some of the ranges. You may know the distance between one farm and the next, or may be able to estimate it by counting the power poles.

Using a rangefinder scope or making use of the duplex reticle is an excellent method of determining the range. With this information, you can use your range card to find the number of clicks up you need to set for this range.

Hitting at the range you find shouldn't be a very great problem. Having confidence in yourself to do the job can be a problem. This is where your practice and qualification play important roles. You know your ability to hit at various ranges. If you've practiced intensively, you should know the maximum range at which you can be sure of making a head shot, and the maximum at which you can make a sure body shot.

RANGE CARD OR HOLD-OVER?

Most police sniping shots are at less than 100 yards, as we've seen. There is the occasional shot at much longer range, and it's necessary to be prepared to take it.

There are several ways to compensate for range. The simplest, technically, is to take up a sniping position at the range at which your rifle is zeroed. Another, using "point-blank," is useful when you don't need pin-point precision and the range is not too great. If you need a body shot and the range is 200 yards or less, you won't have to worry much about bullet drop if your rifle's zeroed at 100 yards.

Another way to do it is to use a range card. This is a card with the number of clicks for elevation at various ranges. Each sniper makes up his own card by trial and error, firing at various ranges. A quick way is to estimate the clicks needed by consulting a ballistic table, such as those in the Sierra Reloading Manual, to find the amount of compensation needed at each 100-yard interval. Translate that into clicks for your scope and you've got it.

The problem with this technique is that you can easily forget that you've changed your scope setting and go on another callout that requires you to fire at

a different range. This can be a serious oversight. The risk is even greater if you actually have to fire on a suspect. With the post-shooting paperwork, interviews with the "shooting team" from internal affairs, and the rest of the excitement, you're unlikely to remember to re-zero your scope.

The best technique is the hold-over. You still need a range card, listing the up or down adjustment needed for various ranges. Instead of cranking the settings into your scope, you hold over by the required amount. Let's see how this works for the Sierra 168-grain Match bullet, which typically comes out of the muzzle at slightly over 2600 fps.

With the weapon zeroed for 100 yards, the bullet falls 4.44" below the crosshair at 200 yards. Using the rule of thumb that a man's head is about ten inches deep, you hold over by slightly less than half your suspect's head. For a head shot, you'd hold slightly over the top of his head. You could hold right on for a center-of-mass shot.

At 300 yards, the bullet drops 15.8", which means that you'll need to hold over 1½ times the height of his head. The drop at 400 yards is 35.23", or three feet. Assuming that your suspect is six feet tall, hold over by half his height.

This may seem very amateurish, but it works. You avoid the risk of going on a callout with a rifle that's out of zero. Of course, this system isn't precise enough for head shots at the longer ranges, but do you know anyone who's actually done a head shot at 300 or 400 yards?

THE BULLET DROP COMPENSATOR

The bullet drop compensator overcomes many of the objections of the various systems used to adjust

for range. This is a cam-operated knob or ring that adjusts the elevation to compensate for the bullet's trajectory over a variety of ranges. There are different designs. One type is a cam attached to the variable-power ring. When the shooter adjusts the power of his scope to place his target between the stadia lines, as in a conventional range-finding scope, the cam raises or lowers the rear of the scope to place the bullet correctly.

Another type is a knob linked to the scope's power setting. This raises or lowers the reticle as the shooter adjusts the power to bracket the target in the range-finder lines. Yet another type is a knob attached only to the reticle. This raises or lowers the reticle as the shooter turns the knob to set the range, which is marked on the outside of the knob. This incorporates no range-finder feature, and the shooter must determine the range by other means.

Some of these are pre-set and calibrated for a particular type of ammunition. One such is the Leatherwood A.R.T. Others are generic, set up to adapt to a variety of bullet trajectories. There may be a set of cam knobs, and a chart listing which knob is closest to which cartridge and bullet weight. These are approximations, but they may be good enough for the purpose.

Another way to do it is to use the blank knob included with many brands. This allows calibrating your weapon and your ammunition to the scope. Doing so requires patient work on the firing range, but it's worth the trouble.

WATCH THE BACKGROUND

Rifle bullets go far. In built-up areas, they can endanger innocent parties by over-penetration. If you

miss a shot it can travel many hundreds of yards. Even if you hit, a bullet passing through a fleshy portion of the body can travel beyond the target.

You should always watch the target's background to estimate the risk of bullet over-travel. A solid wall is fine, but there are a couple of complications with walls. The same rules apply as when seeking cover. A wall may be simply an interior wall, and if there are hostages or other innocent parties in an adjacent room, they may be in danger.

Over-travel is another reason for selecting high ground for a sniping position. If you shoot up at a target, a bullet which doesn't stop in your suspect will go on, possibly for many hundreds of yards. If you're firing down at the suspect, a miss or over-penetrating bullet will strike the ground very close.

THE NEED FOR A FIRST-SHOT STOP

The urgency when the police sniper gets the green light is extreme. There are two problems. The first is time. The decision to use deadly force almost never comes when events are moving along in a relaxed manner. The green light often comes when the suspect has already killed a hostage or has threatened to do so. There's a need to put him down before he can act.

The second problem is that the hit must be instantly incapacitating. In practice, this means a quick kill because it's almost impossible to produce a wound that "stops" a suspect without being a serious hazard to his health.

One of today's prominent authorities on gunshot injuries, Dr. Vincent Di Maio, affirms that there is no magic bullet or caliber which will guarantee a stop.[1] Dr. Di Maio's discussion concerns pistol bullets, but the same is true of rifle bullets and projectiles from shotguns. It's essential to strike a vital organ to cause an instant "stop." The size and power of the projectile are much less important than the site of the hit.

Fairbairn and Sykes describe an instant "stop" caused by a caliber .380ACP bullet which hit a suspect near the spine.[2] Rifle bullets generally cause more severe wounds than pistol bullets because of their much higher velocities.[3]

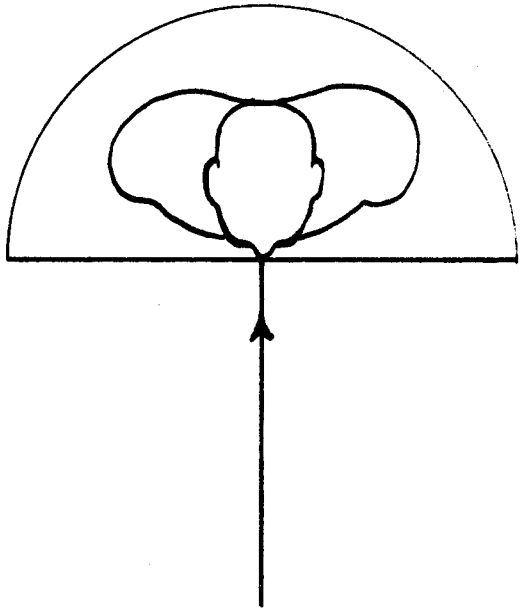
RIFLE BULLETS

One important effect of a high-speed rifle bullet is "hydrostatic shock," the pressure wave it produces by displacement of water-carrying tissue. This results in a temporary cavity many times the size of the permanent cavity drilled by the bullet itself.[4] The pressure wave damages tissue far from the wound track, and can destroy an organ that the bullet does not hit directly. A true understanding of the temporary cavity did not come until it could be confirmed by high-speed photography showing the effects of bullets striking water, gelatin blocks, and anesthetized animals. This explains the many serious bullet wounds which have small entrance and exit holes. Failure to understand this has led to some myths and misunderstandings about incapacitating wounds in police sniper work.

Another effect of a bullet is to cause "secondary missiles," pieces of bone broken off and sent into the body with some of the transferred force of the bullet. This effect is much like what happens when one

marble hits another and sends it on its own path. Each secondary missile creates its own wound track, although not with the same explosive force as the bullet.

This effect enhances the destructive force of a bullet but it can also cause a problem. If the suspect is holding a hostage very close to him as a shield, a secondary missile can hit the hostage. The hostage will probably be splashed with the suspect's blood in any case, but a solid object increases the risk. You may decide to take the shot anyway, calculating that the risk to the hostage will be greater if you do nothing, but you should be aware of the risk and how to minimize it.



The danger zone begins at the point of impact, as secondary missiles can go in any direction. If the bullet strikes bone or a hard object in the pocket, there may even be bullet fragments flying.

It's best to fire when the suspect is behind the hostage, rather than alongside or in front. This may seem to be a silly point, because a suspect will usually hold the hostage as a shield, but keep in mind that if there's more than one police marksman deployed, the suspect will be visible from different viewpoints. In such a case, the sniper who has the best shot fires. "Best shot" in this meaning isn't the largest target area, but the view that will have to bullet path farthest away from the hostage, and not continuing through the suspect to hit the hostage. It's also preferable that the hostage not be in the 180-degree arc that begins when the bullet hits the suspect. This is the danger zone for secondary missiles.

THE CENTRAL NERVOUS SYSTEM

It's generally agreed that the central nervous system is the preferable target when it's necessary to stop a suspect. A shot in the spine will cause a subject to drop immediately, because it interrupts the nerve impulses that control voluntary movement. If the hit is high on the spine, it can kill by stopping the heart-beat and respiration.

The brain is the best part of the central nervous system to destroy for an instant stop. The brain has several parts. Roughly they are the cerebrum, which controls thought, the cerebellum, which controls muscles, and the medulla oblongata, which controls the heart and lungs. The belief has come about that the preferable target is the medulla, because its destruction stops the vital processes. The medulla is the smallest part of the brain, and sits between the rest of the brain and the spinal cord. It's harder to hit this small area than the whole brain. Fortunately, it's

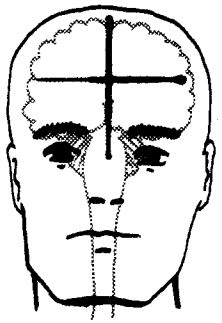
not necessary to be so precise to "take out" a suspect with one shot.

A rifle bullet that hits anywhere in the brain cavity will destroy the entire brain because of hydrostatic shock. If this seems hard to believe, look again at the color photo of the Kennedy assassination. The frame shows the moment President John Kennedy was hit by the bullet. A pink cloud is visible in front of his forehead. This is pulped brain matter spewing out, propelled by hydrostatic shock. A drawing of the bullet path through President Kennedy's head shows that the bullet did not hit the medulla directly.[5] It may have grazed it, but the entire brain was destroyed anyway.

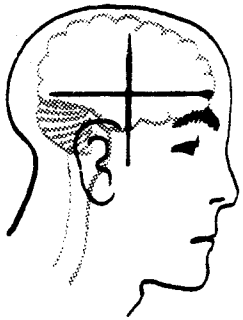
Confirmation of the instantly lethal effect of a direct hit by a 30-caliber rifle bullet in the cranial cavity is in a photograph of a soldier shot in the head, which shows the extensive damage.[6] It's worth noting that a bullet penetrating the skull is likely to do more damage to the tissue in the immediate area because of the confined space. The net effect is an instant loss of consciousness and a stopping of life functions.

The brain takes up most of the top of the skull. It's about four inches wide, and roughly three or four inches deep, tapering somewhat at the bottom as it blends into the medulla and spinal cord. Seen from the side, the brain is about five inches long, with a depth varying from about four inches at the back to about two in front. The brain cavity is filled with liquid. This has a double effect. On one hand, the liquid cushions the brain in normal circumstances. It also provides an excellent medium for the transmission of hydrostatic shock, and a bullet entering the skull will have an explosive effect even though it does not touch the brain.

When going for a head shot, it's important to visualize the brain as it appears from different viewpoints. When firing from the front, anywhere on the centerline of the face will hit the brain or spinal cord. Anywhere in the top third of the skull will place the bullet within the cranial cavity:

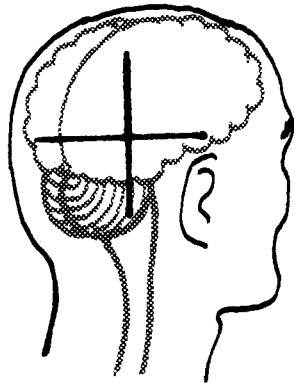


Seen from the side, the brain appears somewhat larger. It covers more area, but the spinal cord may not be exactly where you expect it. Any shot in the neck's likely to be lethal because it will damage the windpipe and/or major blood vessels, but it won't be as instantly disabling as a brain shot. Put the crosshairs on the center of the brain:



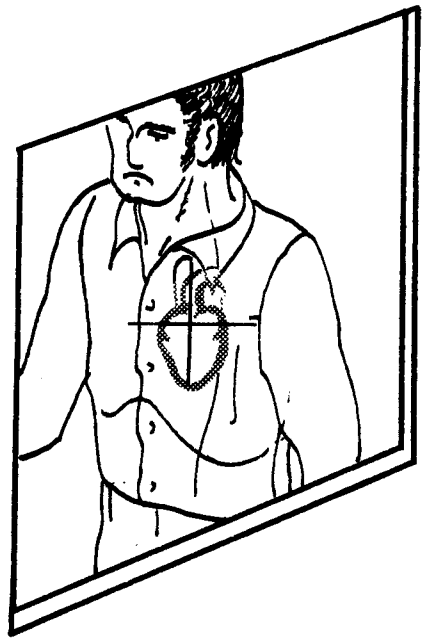
When firing from the suspect's rear, again go for the center of the cranial cavity. If you're slightly to the side, allow for this in placing your crosshairs. A neck

shot would work a bit better, because it would strike the windpipe and the spinal column, as well as damaging blood vessels through hydrostatic shock, but the brain shot is sure:



OTHER VULNERABLE AREAS

If the range is too long for a sure hit in the brain, try for a body shot. In this case, center of mass is also the aiming point for the best chance of hitting vital organs. Although we remember the locations of the body's organs from our anatomy books, these memories are usually misleading. People vary in their body proportions, the sizes of their vital organs, and their location. Moreover, these organs are not tied down with nylon cord. They move around as the person moves. You can't depend on the heart being in exactly the same place all the time, even in the same person.



Another reason for going for center of mass is reducing the probability of a miss. At long ranges, wind effects are almost unpredictable. Aiming at the center of the largest target gives you the best chance for a hit. Assuring a hit involves getting as close to the target as practical, getting into a stable firing position, and estimating the range closely enough to make the shot.

In some instances, the range is short but the suspect's head isn't visible. If you're close enough to be sure of a hit, there are three vital areas to consider because they're vulnerable to rifle fire.

The spine is vulnerable because cutting the spinal cord will paralyze the suspect instantly. In this regard, the exact site of the hit is important. A hit in

the lower spine will affect the legs, but not the arms. The effect of hydrostatic shock over more than a few inches in undependable.

The next area to consider is the solar plexus, immediately below the rib cage. We all know, from common experience, what a punch into this area will do. A rifle bullet produces more impact and a severe wound, and the suspect doubles over.

Finally, the kidneys are vulnerable because of the nerve complex and the large blood supply. A shot into the kidney area will shock the suspect, paralyzing him until he loses consciousness from loss of blood.

There is no hard evidence to prove the superiority of a shot to one area over the others. Any claim that a kidney shot will stop a suspect faster than a solar plexus shot is speculation, not fact. One way of ensuring a quick and total "stop" is for two snipers to fire simultaneously, as described below. Aiming at two different vital points will greatly increase the chances of instant and total immobilization.

SNIPING POSITIONS

Another departure from conventional shooting practice is in sniping positions. Competitive shooters fire from a number of specified positions because the rules require them to do so. A sniper fires from the steadiest possible position he can find.

It's always best to have the fore-end supported. A bipod can work, but a sandbag or beanbag is more practical.[7] Under no circumstances should you rest the barrel on a sandbag, wall, or piece of furniture,

nor should you have anything touching the barrel. Anything which touches the barrel will affect its resonance, impairing accuracy.

Using a TV set or microwave oven as a rest is far better than trying to shoot off-hand. Try to place something between the weapon and the support. A pillow or folded blanket will do. In a pinch, use your hand and forearm.

Supporting the weapon is only one problem. The whole body must be supported and steady for a good aimed shot. It's important to maintain a "spot-weld" with the cheek-bone against the stock. If at all possible, the shooting position must be comfortable and relaxed.

Prone positions are nice, but rarely possible in operations because of obstructions. You're most likely to be in a sitting position, or a compromise between prone and sitting, keeping the body as low as possible and the rifle supported. Your firing

position is also likely to be your observation position, and if it's uncomfortable, you won't be able to maintain it for very long.

IMMOBILIZING A CAR

This depends upon whether the car is still or moving. A sniper can easily keep a suspect from driving away in a vehicle by placing several shots into the engine compartment. Although smashing the engine block is unlikely, damaging the very vulnerable fuel and ignition systems is probable. Smashing the carburetor or distributor will prevent starting the engine at all, and is the best way to do it. Less effective are puncturing the radiator or oil pan, because the engine can run for a short time without seizing.

Despite some misinformation published about the alleged ineffectiveness of gunfire against automobiles, most of the time rifle bullets fired straight-on will penetrate a windshield without deflecting enough to cause a miss.[8] The effectiveness will depend on the caliber, and the best course for you, as a sniper, is to run your own tests. Seeing is believing, and test-firing against windshields from wrecked cars should provide a credible answer for you.

You'll find that caliber is important. .223 bullets have a reputation for being too light for effective penetration, but they get through windshields and most bodywork. The newer 63-grain full-metal jacketed SS109 bullets penetrate very well. The larger caliber .308 bullets also penetrate very well. Penetration also depends on the angle of incidence, which is the angle at which your bullet strikes the glass. A

ninety-degree angle gives the best penetration. Decreasing the angle makes it more difficult, and you eventually come up shallow angles which simply deflect bullets of large caliber. Finally, you'll find that windshields and side windows are different compositions. Windshields are laminated. They're "sandwiches" of two layers of glass bonded by an inner layer of plastic. This is to prevent shattering. Side windows are tempered glass, specially heat- treated to increase strength but also brittleness. When struck, they tend to "craze" and break up into small, pebble-sized fragments.

Car bodies are also tricky. Automobile sheet metal is soft and flimsy, and even a .22 rimfire will penetrate it, but car doors contain more than one layer of sheet metal. They also contain the lock and window mechanisms, and stiffening members which are thicker steel. These will impede passage of a bullet, as will the glass if the window's rolled down. Firing at a car from the front presents the problem of penetrating the engine and firewall. Firing at it from the rear means that the bullet must penetrate the outer skin of the trunk, its contents, and another inner compartment divider, the rear seat back, to get to rear seat occupants. Striking front seat riders requires penetrating the front seat backs too. It's simpler to fire through the glass.

This is why it's unwise to make any blanket statements about penetration of car bodies and glass by bullets. There are enough ifs, ands, and buts to justify careful study by any police sniper who thinks he may have to fire on a car one day.

Firing at a moving car is often prohibited by departmental policy. Hitting a vital part of the car is uncertain when the car is moving, and "taking out"

the driver offers more chance of success. There are some serious problems, though.

Firing with enough precision to hit the driver is tricky. The chances of hits on other occupants may make this option unworkable. Where do misses go? In a built-up area, the risk to innocent parties may be too great to justify stopping a car by gunfire.

What happens to the car after incapacitating the driver? It doesn't stop on the spot, but continues to travel, out of control. The result will probably be a crash, the severity depending on the car's speed and the locale. What happens to any passengers? This is a vital question if there are innocent people inside the vehicle. The vehicle can also hit innocent people who are in its path.

FIRING WITH A LIGHT

In some instances, it may be tactically desirable to fire with the aid of a high-intensity spotlight. The technique is to locate the suspect, get a rough aim, turn on the light, and immediately fire, turning the light off after the shot. There are two ways of using a spotlight as an aiming aid, and a couple of problems connected with its use.

One way is to have a second officer handle the light, and to fire on a count, as described below. The light goes on at count THREE and the sniper fires as soon as he has target identification and a good sight picture. The other way is to have the spotlight mounted on the weapon so that its beam follows the bullet path. The switch is a small, flat one mounted on the forestock with a piece of VELCRO. This allows the sniper to control both the light and the weapon.

Why a light, anyway? The reason is target identification. If there's any doubt, it's imperative to be certain that you've got the right person in your crosshairs.

If you're going to use a light, it's wise to be behind cover. Although your spotlight will be on for only a second or two, it can still draw fire. Also make sure that any officers near you are under cover. Bullets can go wild, especially if the suspect or an accomplice fire in a panic reaction.

FIRING ON THE COUNT

In some cases, there will be a need for two or more snipers to fire simultaneously, or very close together. This may be to "take out" several suspects at once. Another reason can be to hit a suspect twice to insure instant incapacitation.[9] The simplest way to do this is to count "ONE, TWO, THREE," firing on THREE.

WINDOWS

Whether rifle bullets penetrate windows depends more on the composition of the glass than anything else. Ordinary window glass is not a significant obstacle. Even a .22 Long Rifle bullet will penetrate and go on to a target beyond, if fired at ninety degrees. Structural glass, as found in some modern buildings, is another matter. Some of this is both thick and stout, and resistant to bullets.

Some people in the field think that the best procedure to follow is a breaking shot followed immediately by the shot for effect. There are several problems with this practice. Firing tests conducted to find the best calibers and procedures for shooting

through windows showed that the results can be very inconsistent and unpredictable. First, shooting through window glass at a ninety-degree angle often results in a neatly-drilled hole, without shattering the pane. As the angle becomes more acute, the glass tends to break more often. The course of the bullet afterward is surprising. Instead of skidding off the glass and continuing outward, it tends to deflect inwards, towards the glass.[10]

TECHNIQUES FOR THE TASK

Police sniping is different from both military sniping and competitive precision shooting. It's necessary to adapt to the conditions, and change the techniques where necessary.

NOTES

1. *Gunshot Wounds,* Vincent Di Maio, M.D., NY, Elsevier Science Publishing Company, 1985, p. 309.
2. *Shooting to Live,* William E. Fairbairn and Eric Sykes, Boulder, CO, Paladin Press, reprint of the 1942 book, pp. 74-75.
3. *Gunshot Wounds,* p. 311.
4. *Wound Ballistics,* Col. James Boyd Coates, Jr., and Major James M. Beyer, Washington, DC Office of the Surgeon General, 1962, pp. 135-141.
5. *The Witnesses, The Highlights of the Hearings Before the Warren Commission,* NY, Bantam Books, 1964, Illustration #15.

6. *Wound Ballistics,* p. 381.
7. *Sniper Counter Sniper, A Guide For Special Response Teams,* Mark V. Lonsdale, Los Angeles, CA, Specialized Tactical Training Unit, 1986, p. 73.
8. Tests conducted by Larry Moore, Editor of *S.W.A.T.* Magazine.
9. *Sniper Counter Sniper,* pp. 115-116.
10. Larry Moore tests. See also *Sniper Counter Sniper,* p. 68, for a photo of a piece of plate glass neatly drilled by the bullet.

BARRICADED SUSPECT TYPES

There are several types of barricaded suspects with which a SWAT team will have to cope. They have different purposes and different mentalities. The proper action will depend on the commander's expectation of how the suspect will proceed. Let's quickly sketch the different suspect types to get an idea of the different problems they pose.

THE CRIMINAL

This is the armed robber whose crime has been interrupted, or the career criminal facing arrest. He's basically rational, but fearful. He can understand that the SWAT team is an overwhelming force deployed against him. His main interest is in surviving the encounter.

Many career criminals are what psychiatrists call "sociopaths," persons who basically have no conscience, and no consideration for anyone but themselves. This makes them more difficult to handle, and this is reason for extreme caution. In negotiation with a sociopath, you can expect him to make a promise only to gain a temporary advantage, and to break it as soon as it suits him.

The overwhelming fact about the career criminal or "sociopath" is that he'll look out for his own interests

first. This is the key to dealing with him. He's not going to be living by any slogans or causes. He's unwilling to lay down his life for an abstraction.

The way to deal with this type is for the negotiator to establish contact and try to calm him. This is the key to convincing him that resistance is useless and that the best course for him is surrender. Even if the criminal holds hostages, pointing out to him that the penalty for murder is more severe than the penalty for his crimes so far will usually persuade him to give up his hostages. At the same time, the negotiator must be wary because the person with whom he's dealing is not quite normal, mentally. His view of the world is different from that held by most people, and his holding to commitments is questionable, at best. Negotiating from a strong position is the only way to go, and the negotiator must understand that during the process he must cut the suspect no "slack." Depending on a suspect's promises is foolish.

THE "PSYCHO"

While it's medically inaccurate to lump all emotionally disturbed persons under one label, the police officer is not a psychiatrist and cannot make a psychiatric diagnosis. This is why the term "psycho" will have to do, unscientific as it may be.

The psycho may be simply emotionally overwrought, an otherwise "normal" person caught up in a crisis he can't handle. An example is the employee who "goes ape" and tries to kill his supervisor and/or fellow employees. Another is someone involved in a family crisis who has committed violence against other family members and who is irrational.

The outright psychotic may have strange ideas, such as thinking that the SWAT team is actually a unit of the Red Army, or that he is on some sort of a mission. This sort of person is "out of contact" with reality, and usually there's no way to reason with him.

The depressed person may be both suicidal and homicidal. One way for him to end his problems is to provoke another person, such as a police officer, to kill him. This is what's labeled the "victim-induced homicide," and is very difficult to resolve.

The key to coping with the "psycho," if it's at all possible, is for the negotiator to try to establish an understanding relationship and to persuade the suspect to trust him. This is easier to say than to do, and much depends on the skill and sympathy of the negotiator. Time is on the negotiator's side, however, because the suspects tend to calm down as the hours pass. Building rapport can involve many hours of listening to the suspect's outpourings, and trying to make sense of what may well be an irrational account.

In such cases, the commander may send for a psychiatrist to advise the negotiator. An important caution is that the psychiatrist should be experienced in this sort of situation, as a lot of harm can result from taking advice from one whose background includes only a clinical setting. Generally, only the larger cities have such highly specialized talent available.

THE IDEALIST

This type is by far the most dangerous, for several reasons. The idealist is a political "terrorist" fighting for a cause, and this absorbs all of his energy. To the

idealist, his cause is worth more than his life. This is why the idealist is often disdainful of the prospect of death. Some welcome it, because their religion promises them eternal heaven if they die in battle for the cause. This is the sort of person who doesn't hesitate to drive a truck bomb into an enemy building.

It's unwise to under-estimate the idealist because of a derogatory label such as "terrorist." The "terrorist" is not necessarily a scuzzy and cowardly type, and is often a formidable fighter.

The idealist is typically intelligent, and shows courage. He is a skilled and serious opponent. If he has hostages, he'll most likely carry out any threat to kill them, regardless of consequences to himself. It's important for the negotiator and the SWAT commander to understand this, because often negotiations with an idealist won't have any effect in resolving the crisis peacefully. The idealist is quite willing to die fighting, and as we've seen, some are even eager to do so. Therefore, negotiations must be expedient, aimed at gaining time and tactical advantages. Persuading the terrorists to release a hostage or two helps obtain information about the terrorists, their number and weapons, and the physical layout. This information is vital for an assault team.

Some of these terrorists are very well-armed and well-trained. This is important to bear in mind, because a small group of armed and trained fanatics can probably out-fight a SWAT team of equal size. This may seem hard to believe, but is evident from the types of people who make up serious terrorist groups. They're not thinking of returning home to their families at the end of a tour of duty, and they aren't trained in "shoot-don't shoot" scenarios. When

they pick up a weapon, they're ready to shoot, period. They also accept casualties because they see themselves as a military force.

One practical result of this came about in the Iranian Embassy incident in London. While the police cordoned off the area, they did not make the assault. This task was for the S.A.S., the Special Air Service Regiment, a military unit.

CHOICES

It's a vital first step to get information about the suspect type. This will lay the groundwork for the decisions and the actions to follow. This will also provide justification for the decisions if the case ever comes to court and the SWAT commander has to defend his actions against litigation.

NIGHT OPERATIONS AND TACTICS

Criminals don't call it quits at nightfall. There can be a callout at any hour, and the sniper has to be ready to open fire against a designated target in poor light.

NIGHT VISION

The human eye has two types of light sensors, cones and rods. The cones are for acute vision in bright light. Rods are sensitive to low light. It takes time for the rods to develop their full sensitivity, and a period of accommodation to low light is required when coming from a brightly-lit area. The police marksman who has had to drive to the scene may not be in the best shape to engage in night operations if his vision is somewhat desensitized from traffic.

There are several factors which degrade night vision:

Dazzling

Bright light shining in the field of view can spoil night vision for many minutes. This is why the sniper should position himself so that he's not staring into or near a street light or other bright light.

Smoking

Nicotine is a vasoconstrictor. It contracts the small blood vessels, including those in the eyes. This restricts night vision somewhat. This is true whether the sniper absorbs the nicotine through the lungs or through the mouth, as in chewing tobacco. This is why non-users of tobacco are preferable for the sniper role, but under no circumstances should a smoker light up during a call-out. The light of the flame can dazzle him, rendering his night vision useless for many minutes.

The light of a match or lighter is visible from many yards away, and can betray his location to the suspect, inviting a bullet. This is the origin of the dictum about "three on a match." At the first flare of the match, the enemy sees it. Lighting another's cigarette lets him raise his weapon and aim, and if a third person gets a light, he fires. Unfortunately, an enemy can sometimes react in less time than it takes to light three cigarettes.

Fatigue and Illness

When the body is not in top shape, performance of its parts will suffer, too. Keeping healthy and observing proper nutrition, including an adequate amount of Vitamin A, will help preserve night vision.[1]

WHAT HELPS NIGHT VISION

Try to allow about half an hour to accommodate to low light. In this regard, younger officers will accommodate faster than older ones. In addition, maximum

pupil dilation is larger in younger people. Maximum pupil size in younger people is about 7 mm. Older eyes have diaphragms that can only expand to about 5mm. The smaller aperture admits less light.

When in transit to a night operation, keep an eyepatch over your shooting eye, unless you're the driver and need both eyes for safe operation of the vehicle. The eyepatch is a simple device, but it works all the time. Another device is a set of goggles with red lenses.

When observing at night, it helps to "scan" the area. This means keeping the eyes moving, and not allowing the vision to become fixed in one place. The reason is that night vision depends on a chemical in the rods called "visual purple," and that this bleaches out in a few seconds, deactivating those rods.[2]

If you see something interesting, try not to look directly at it. The center of your retina has the cones, for acute vision in bright light, and you won't see best if you stare directly at what you're observing.

"Night binoculars" help low-light viewing. These are usually 7x50 or larger, because the large area of the objective lens gathers more light than the smaller lenses of "compact" binoculars. Another aid is the "big bell" scope sight, with an objective lens of 56mm or larger. These are bulky and expensive, two factors to anticipate when considering their purchase. A variable scope sight can help in low light, because cranking it down to low power concentrates the light gathered, as the magnification is less.

Light-amplifying viewers and scopes can help in a limited way, and we'll discuss these further in the section dealing with equipment.

Protecting night vision on the scene is as important as arriving with it intact. This requires a thoughtful

effort from all members of the team, as well as other officers on the scene. If searchlights are to play a role in the operation, the commander should consider their effect on his snipers before ordering their use. If there's to be a forced entry, with stun grenades employed, the sniper should be warned so that he can close or avert his eyes.

The sniper should have a flashlight with a red filter, in case it becomes necessary to read or write something during a night operation.

If the suspect is in a car or building, the sniper should anticipate that he may turn on a light for some reason during the operation. In some instances, there may be brightly lit rooms in the building, although the suspect is not in them. This is when the sniper should use red goggles.

SELF PROTECTION DURING NIGHT OPERATIONS

Before taking a position the sniper should look over the area, keeping in mind that he needs to be protected from the suspect's view. It's easy to become careless at night, assuming that the suspect is necessarily under the same visual handicap you are. It's night for him, too, but he's usually in a building or under cover. You, on the other hand, may be silhouetted against a moonlit sky. Street lights may "skylight" you, even though you don't notice it. Having a wall or parapet behind you will help eliminate this silhouetting effect.

You should not only be concealed, but behind cover. The reason is that, although the suspect can't see you now, something may happen that changes

the picture. In an operation that runs for several hours, you might find that the moon has risen, bathing you in bright light. On a cloudy night, a full moon might unexpectedly come out from behind clouds, and light you up. The red filter might fall off your flashlight, or your partner's. Finally, there's the human element. Someone may come up to your position flashing a light to find his way. All of these can bring a bullet your way.

When moving at night, remember that sound seems to carry farther at night. There's less traffic, and city noises seem to die down at night. Be careful not to give yourself away. You'll have to move more slowly, feeling your way, but this is necessary to avoid injury or exposure.

If it's necessary to enter a building to get to your assigned post, always consider that there may be a light behind the door. Inspect any apertures, such as windows or cracks in the doorway, for light before opening the door. If there's no window in the room you're trying to enter, go around the building to find one. It may be possible to peer in and see light coming from under a door to the room you want.

Inside a building, never lean on the wall. Light switches are mounted on walls, and you may discover one by snagging it and turning it on.

Outside, street lights may be inconveniently close. This is the situation that provokes a lot of foolish talk about shooting them out with suppressed weapons. Let's look at the situation and see what the best action is:

1. Shooting out a street light means staring directly into the light to aim. This will definitely spoil the shooter's night vision, especially if he's using a scope sight.

2. The bullet may miss, or go all the way through. It has to come down somewhere. Unless you know that you can angle your shot to land in a deserted area, you're taking a chance. You're also taking a chance that the suspect will hear your shot. Sound travels at night, and a suppressed weapon may be audible farther than you think.
3. Light poles have access plates near the base. These are usually fastened with a couple of screws, and opening one up gives access to the wires. A screwdriver and wire cutter are safer and more quiet than gunfire, even with a suppressor.

GUNFIRE IN LOW LIGHT

Every shot produces muzzle flash, the brightness depending on the cartridge and the weapon. Rifles produce tremendous flashes. You ought to familiarize yourself with the size of the flash your weapon produces at night, so that you won't be surprised when it happens on an operation. Some rifles produce a fireball a couple of feet in diameter, visible for many hundreds of yards. The bright flash can dazzle you and wipe out your night vision. When this happens, it may be many minutes before you can see well enough to take another shot. This is why it's doubly important to make the first shot count at night!

Remember that even a modest muzzle flash will give your position away. If it's necessary to fire, be prepared to duck for cover or move away immediately, as the suspect may shoot back. If you miss your shot, this is a very real possibility. If there's more than

one suspect, it may still happen, unless a second sniper can take out the second suspect.

Suppressed weapons have an advantage in this regard. The long and bulky suppressor doesn't deaden the sound completely, but it absorbs all of the muzzle flash. A suppressed weapon's a good choice at night for this reason.

ANOTHER WORLD

It's truly another world at night, and it's best to be prepared in order to be effective. This underscores the need for realistic night training and qualification, as a sniper prepared only for daytime missions will find himself lost when darkness falls.

NOTES

1. *Sniper Counter Sniper, A Guide For Special Response Teams,* Mark V. Lonsdale, Los Angeles, CA, Specialized Tactical Training Unit, 1986, p. 126.
2. *Sniper Training and Employment,* U.S. Army, October, 1969, p. 123.

SWAT TEAM MAKE-UP

We can see what the SWAT team needs in members, based on its functions. Because the SWAT team is usually small, and the entire team is not usually available for every callout, members must be cross-trained to perform several jobs.

We're going to look at the specialties in terms of their functions, not the weapons they carry. Designating an officer "shotgun" and another "submachine gun" is a useless distinction if they're both on the entry team. Different officers have different jobs, and their weapons and equipment are dictated by their jobs.

COMMANDER

There are really two ways of looking at this job. One is from the viewpoint of the commander in a callout. It's desirable that the commander have enough seniority or rank to throw some weight in a callout, because when a crisis occurs, often there are many officers responding, and some of them are senior officers who just come for the excitement. They can interfere, unless the SWAT commander has enough rank to hold his own, or there's a directive from the Chief naming the team leader as the site commander.

The other function of the commander is the administrative leader. In this role, he must make up the budget, duty roster, "wish list," and serve as a buffer between the team and higher management. This requires a different set of skills, and there should be serious thought given to the principle that field command and administrative command require different people. The administrative commander must have the interpersonal skills and political savvy to represent his team with the department's managers. There have been cases of teams faring badly because their commanders were not "politicians."

In small agencies, there's no possibility of having two or more commanders, but there's still an out. The SWAT team is usually under the "patrol bureau," "special assignment bureau," or "selective enforcement bureau." The team commander is the operational commander, while the administrative commander is the bureau chief. He is the buffer between the team and management. The odds of his having good relations with the team commander are good, because the bureau commander is usually the one who selects the team leader.

Finally, the on-the-scene commander will be the one who shows up. The team's nominal commander may be on vacation or on a course, or otherwise unavailable. The on-site commander can be the senior officer on the scene, the senior SWAT officer, or a specially-designated commander.

If there are enough people, there should be a deputy commander to keep the operational log and to serve as a stand-in if the commander becomes a casualty or otherwise unavailable. We have to expect that, realistically, the deputy commander will have to do all sorts of odd jobs, such as liaison and press

relations, unless enough manpower is available to cover all of the possible positions needed.

CHEMICAL MUNITIONS MAN

The larger teams have specially-designated and trained officers for this. Using chemical munitions can be very complicated, but the problem of finding suitable officers usually takes care of itself. This is because the basics, shooting gas projectiles into a room, are not very hard to learn. The more difficult tasks, such as calculating the amount of gas needed to disperse a crowd in various circumstances and with varying wind velocities, are not likely to come the way of the small team. A larger team can send one or two officers away to the schools run by the manufacturers.

Why send a specialist away to school? The first reason is the training, which is likely to be better and more comprehensive than in-house training or the instruction officers get at the academy. The other reason has to do with liability. An officer who takes a course provided by the manufacturer of the equipment he's issued will be "certified" as competent in its use. Because of vicarious liability, it's important for an agency to be able to document that an officer is competent with the equipment he uses.

The gas man will need to remain close enough to the barricaded suspect to lob projectiles inside the building. He may also have to support a forced entry. This can be by throwing stun grenades or other low-lethality munitions inside.

PERIMETER

Officers who man the inner perimeter are not necessarily generalists. They tend to have specialized skills, such as rifle, shotgun, gas, etc. Some perimeter officers will make up the "entry team," if there is one.

RIFLEMAN

A rifleman may be armed with a carbine, shotgun, or submachine gun instead of a rifle. This is because in the environments in which most SWAT teams operate, rifles are less useful that other weapons. Whatever the weapon, the officer should qualify with it following both departmental and SWAT team policies.

ENTRY TEAM

This is a highly-specialized function, which requires extensive special training and rehearsals. These officers typically wear the heaviest body armor, and may carry stun grenades and other munitions. Many of these manufacturers offer training, and there are even some schools which offer entry team training.

Forced entries against armed opponents are rare, but the job is still hazardous, much more so than other duties.

EXPLOSIVES SPECIALIST

This team member has two functions within his specialty. One is to detect and disarm bombs. The

other is to emplace and detonate the explosives needed for forced entries. There are schools available for explosive ordnance disposal, and manufacturers have courses for linear shaped charges.

Most teams won't have an explosives specialist as a team member. When one is needed, they'll borrow one from another bureau or even another agency if necessary.

PARAMEDIC

This is a relatively new concept, and not in wide use. A SWAT paramedic is an excellent idea, because of the likelihood of casualties. The paramedic doesn't accompany the perimeter officers or the entry team, but stays back at the command post. He advances only when the area is secured.

If a paramedic goes on callouts, he's usually borrowed from the fire department or another agency. Few police agencies have certified paramedics on the staff.

MEDIA RELATIONS

Although media relations are not usually the responsibility of the SWAT team, it's important to have a working knowledge of how to go about it because the department's public information officer may not always be available. It's also important for SWAT officers to understand how the public information officer handles the media so that they may best cooperate with him. This is on the assumption that

the media relations officer is competent. Sometimes he's not.

A major error is using the office of media relations as a dumping ground for a police officer who is a misfit, but who hasn't done anything serious enough to be brought up on charges and terminated. Media relations is an important post, and only someone with both talent and willingness should occupy it.

In coping with the needs of the media, it's vital for the information officer and the commander to understand that there are ways to serve both interests. A spectacular crisis offers an opportunity to show the taxpaying public what their dollars are buying, and how well their police can resolve a dangerous situation. The TV cop shows generate a lot of favorable P.R. for police agencies, but not as vividly as a live situation in their home town.

An important point for the SWAT commander is to keep the media people in an area where they're not in danger and where they can't see anything that might hurt the operation. Barricaded suspects have radios and television sets too.

The commander should designate a safe "holding area" for the press, and the media relations officer should do his best to keep media representatives informed, consistent with the needs of the situation. To cope with the press, the officer will need to have already gained their confidence over some time, and thereby have attained credibility. It will often be necessary to tell them that they must bear with him during the crisis, and that he'll give them a full account afterwards. Lack of credibility at this point can be crippling, leading to unfounded speculations by the media which may do a lot of harm.

TEAM SIZE

The ideal size is the two-man team. This isn't because two men can handle any assignment, but simply because two are quick and easy to mobilize for a callout. If the task requires more officers, assigning more two-man teams will solve the problem.

Why two officers? Traditionally, police officers have operated with "partners." In other tasks people seem to work more effectively and more comfortably in pairs. In the world's air forces, we find a "leader" and a "wingman." A pair doubles the strength and doesn't have so many different types of personalities as to foster conflicts. In larger units, there are always jealousies, rivalries, and smoldering resentments that hinder the task. A pair is also administratively simpler.

Another point is that, in many small departments, there aren't many officers available. A ten-man SWAT team is practical in a department with five hundred sworn personnel, but not in a fifteen-officer agency.

A callout can be difficult enough in a small agency, but getting the SWAT officers together for training can be administratively impossible if the team is too large. This is why small, two-man teams are more practical. The two-man team serves as a building block when larger numbers are both necessary and available. Time is also important. Mobilizing the big battalions is fine, but it's time-consuming, and the situation may be resolved or beyond redemption by the time the troops all get to the scene. A convenience of the two-man team is that two officers living

in the same neighborhood can share one car, which makes mobilization at odd hours quicker and more convenient.

In many instances, too many officers simply get in each other's way. In this connection, it's crucial to understand that coordination is far more important than numbers. A "few good men" who have trained together and who are well-rehearsed are more effective than a larger group that is uncoordinated. When the chips are down, quality is more important than quantity.

SELECTION OF THE POLICE SNIPER

Persons selected for the sniper role should have certain definite qualifications beyond those normally needed for police officers or even SWAT Team members. In this section we'll discuss the qualities needed for a sniper, keeping in mind that some may be similar to those needed for other roles.

MOTIVATION

This may be the most important single factor in sniper selection. If you're a SWAT team commander, you need competent and dedicated team members, not careerists who simply join to "get their tickets punched" on the way up the promotion ladder.

Because training is always a problem, you need stability. Having to train new members constantly degrades your team's effectiveness. A sniper is one of the most highly-skilled members, and not everyone can be an effective sniper. It also takes time to learn the techniques and to learn to interface with the rest of the team. The careerist is, frankly, the sort of person who tries to take out of a job more than he's willing to put into it. He joins, absorbs the experience, gets his service entered on his record, and leaves for another post. A member who stays only a year or two before going on to greater things is not as desirable

as the less ambitious, but competent, person who wants to stay as long as he's useful.

SEX

The employment of females as police officers has generated a controversy that won't be settled in this century. A few certainties have emerged, though. Females, because of differences in body build, are lacking in upper-body strength compared to males. This places them at a disadvantage in hand-to-hand combat. For the sniping role, however, there seems to be no problem. Females can handle any caliber likely to be used by police, and developing the ability to score a hit in a tense situation is more a matter of individual aptitude than sex-linked.

Numerically, you're less likely to find a female who is a firearms hobbyist or who has had extensive shooting experience. This is a desirable quality, although not a dominant one.

Another problem linked with sex is the image and the attitude of the commander and other team members. There's a good deal of pride attached to the "macho" image of a SWAT team. The suggestion that a female might be able to perform some tasks as competently as a male is intolerable to some SWAT officers, including commanders. One went so far as to state explicitly that he kept the physical standards so high that no female could qualify, thereby keeping out any "SWAT Twats."[1]

VISION

The police sniper should have good vision, but there are a couple of special considerations. Vision is

usually not a serious problem, because police candidates are selected only after medical examinations including a vision test. Vision can deteriorate, and require corrective lenses.

The questions relating to eyeglasses has received many erroneous answers, based on false premises and faulty thinking. It's become a truism that a sniper should not be an eyeglass wearer.[2] The theory is that a reflection from a lens can betray his position. Unfortunately, this reasoning ignores the scope sight, which has a large objective lens that can be reflective if light falls on it at the right angle. The scope's objective lens is more likely to reflect light because it's more forward than the shooter's eyeglasses. Concealment depends more on individual ability than on reflections from lenses.

Another theory pertains to hand-to-hand combat. The eyeglasses may be knocked off during a fight. Realistically, the sniper is probably the least likely officer to have to fight a suspect hand-to-hand. Other officers in the inner perimeter are much more likely to encounter a suspect up close.

Yet another view is that the sniper with corrected vision may be unable to function because of lost or broken glasses. This depends very much on the individual and the amount of correction required. There are many types and degrees of vision impairment, and some are unlikely to affect performance as a sniper. An officer who needs reading glasses, for example, may be perfectly able to sight a rifle without them.

The only important aspect of vision is that the sniper be able to see his target well enough to place the bullet where it's required. This is not a very demanding requirement, because with an optical aid

such as a scope sight, seeing the target is not a serious problem, and marksmanship takes in several learned skills as well as basic vision.

PERSONALITY FACTORS

There are several mental qualities that help the police sniper in his role. The first we'll consider is patience.

PATIENCE

It's important to have patience. The sniper is often required to keep his concentration for hours, observing a target through his sight or binoculars and reporting any activity. Anyone with a short attention span, who loses his concentration and becomes inattentive, can compromise the mission by failing to observe and report.

Stability and maturity are necessary because a police sniper must be reliable, and able to perform his duties at any hour of any day. These qualities are not necessarily age-linked. The way to find officers who show emotional stability is observation on the job. Past performance in a variety of assignments is a good guide.

GOOD JUDGMENT

This is hard to measure, and almost impossible to describe adequately. For the police supervisor, good judgment in a subordinate means making the correct decisions most of the time. Correct decisions are

those which are tactically sound, legal, and will not reflect badly upon the department.

Bad judgment is as easy to spot as good judgment is elusive. The officer who is a "maverick," who has an unusual number of citizen complaints, who seems always to be in the wrong place at the wrong time, is likely to show poor judgment.

Evaluation must be based largely on the officer's record with the department. Former supervisors will be able to provide insight into a candidate's performance.

PHYSICAL FITNESS

It's necessary for a sniper to keep physically fit, because his role will often require exertion such as climbing to a vantage point. Physical fitness is worthwhile on general principles, for reasons which are too obvious to need discussion here.

SMOKING AND ALCOHOL

Opinions vary regarding the use of tobacco and alcohol and their effects on marksmanship. Some champion shooters have occasionally stated that a couple of ounces of "group tightener" before a match helps their marksmanship. Others advise against it. Many condemn smoking, while others say it has not harmed their marksmanship.

What is not in dispute is that both can be harmful to health. A few police departments now require new recruits to be non-smokers.[3] Other agencies sponsor "quit smoking" programs. The reason has to do with health insurance premiums. They're higher for smok-

ers because smokers have higher rates of heart ailments, circulatory disorders, and cancer. The police sniper should realize that smoking affects night vision marginally. There should be no smoking while on a callout.

Alcohol is another problem. It usually is and should be forbidden while on duty. In any event, no uncontrollable drinker should qualify for the team. It matters not if he claims that a sip of "group tightener" steadies his aim. This may be perfectly true, but liability is such a serious concern today that no alcohol is tolerable on duty. If ever there's a lawsuit, ingestion of alcohol will provide a huge opening for an opposing attorney.

A problem comes up when there's a call-out from home, and the officer, expecting to be off-duty for several hours, has had a drink or two. If you're the commander, how do you handle this? Cover it up? Ignore it? A better solution is rotating "dry days." Officers in critical assignments should take turns abstaining. Rotating "stand-by" or "on call" status is almost the same thing. Both will work if the officers follow them faithfully.

INTEREST IN FIREARMS

There's a good case for choosing a firearms hobbyist. Most police officers are not gun hobbyists, and carry a weapon only because the job requires it. The sniper should have an active interest because this will help maintain his enthusiasm for regular practice and qualification.

There's also the other side of the story. Someone who hunts, or who has had military experience, may have picked up bad habits. Breaking these may be

more difficult and time-consuming than training a sniper from zero. The decision must take the individual into account.

THE WILL TO KILL

There's a difference between firing in hot combat and a cold-blooded, calculated "taking out" of a suspect. An officer who returns fire directed at him by a suspect does so knowing that he's trying to save his life. Killing on a "green light" is different, and it's important to choose a sniper who won't freeze, or even hesitate.

Selecting the sniper with the will to kill can be difficult. Interviewing in a formal sense isn't necessarily the best way. It's hard to get a meaningful answer to a question such as "Would you kill if ordered?" or "Are you willing to pull the trigger when you get a green light?"

Other techniques, such as psychological testing and having the candidate pass through an "assessment center" are meaningless because they're unreliable. In any event, there's no assessment center geared to select snipers. Psychological tests don't measure the qualities needed in a police sniper, and have significant margins of error for the qualities they're designed to measure.

A major point about this question is the widespread belief that killing must necessarily be distasteful to a decent person. It's bad form to admit that killing can leave one cold and unaffected. Still, some people can kill without emotion, and they're not necessarily criminal psychopaths. Killing and other dramatic events simply don't provoke sharp emotional reactions because they remain "cool."

EFFECTIVE SNIPER SELECTION

The commander will have to choose his sniper by considering a number of factors. Intelligence, overall ability, personality factors, and on-the-job performance will weigh heavily in the decision. Probably the most decisive one will be the applicant's record in the department. His performance over the long haul, and in crises, will probably be the best indication of his ability to put out the effort required to be a successful police marksman.

NOTES

1. Personal acquaintance of the author, related during a casual conversation.
2. *Sniper Counter Sniper, A Guide For Special Response Teams,* Mark V. Lonsdale, Los Angeles, CA, Specialized Tactical Training Unit, 1986 p. 3.
3. According to James J. Fyfe, writing in the *1987 Municipal Year Book,* 2.7% of agencies in his 1986 survey required recruits to be non-smokers.

TRAINING AND MAINTAINING

The police marksman may come to the post with previous experience or without, depending on the department's policy and the SWAT leader's preferences. In all instances, however, he must receive training from his agency. There are two vital reasons for this, and ignoring them can lead to serious complications.

The first reason has to do with integrating the sniper into the team. Whatever his previous experience, he has to know and understand the standard operating procedures followed by his unit. His previous employment probably had him following policies and practices different from the present assignment. This is especially true of any with military sniper experience.

The second reason has to do with legal requirements. Because of vicarious liability, the agency is responsible for his training, and must be able to document what instruction the sniper received. The agency must also document the sniper's level of proficiency, and show that it's enough for the agency's requirements. This is exactly the same as "qualification" for other officers.

Whoever is responsible for training must have a written lesson plan to be on the safe side. The Whitley vs. Warden decision established the "documentable rule," which states that if a particular topic or detail

of training isn't in the lesson plan, the court must treat it as if it had not been presented.

The lesson plan need not be overly elaborate. It can be abbreviated by having certain material listed as included in a certain training manual, or a part thereof. For example, if part of the training includes how to "dope the wind," it's enough to state that it follows the format listed in the U.S.M.C. Sniper Manual, for example, if that's the text used.

Another aspect of liability has to do with manuals, training films, and videotapes procured from an outside source. These training aids are generic, unlike those produced in-house, and often contain material not applicable or contradicting departmental policy. Before using any outside-procured training materials, the training officer should review it and take notes regarding any such passages. These notes must be part of the lesson plan and, according to the Sager Decision,[1] the training officer must stop the film or tape at the appropriate point and explain that what the students just saw is not part of the training or part of departmental policy.

TRAINING GOALS

Training should not be bound by tradition. For years, combat pistol shooting was dominated by bullseye marksmanship, which did not correspond to real-life shoot-outs. Likewise, much police sniper training is mis-directed, counter-productive in some cases, and at best a waste of time. We can see from the discussion on police sniper operations that there are certain skills the police marksman must develop, and others which won't be very useful. Because of the need for a sure hit, the police marksman won't be

using most of the shooting positions normally taught. The standing and kneeling positions have their uses in competition, in the armed services, and even in the SWAT team by members using semi-auto rifles. However, they're useless for the sniper role.

BASIC TRAINING

The sniper should have basic SWAT training. Although a sniper doesn't need all of the training because of his specialized role, it's important to cross-train, to develop all-round SWAT officers rather than over-specialized technicians. Versatility is important in this field. Generalized training involves exercises with the team, which helps develop the coordination that is an important part of team proficiency.

Another aspect of team training is psychological. SWAT team members are accustomed to working together, and need to know what other members will do in a crisis. Predictability is important to building mutual confidence. A team member won't become fully accepted by the others until he's proven himself in training exercises and in operations.

Some SWAT training isn't truly operations-related. An example is rappelling, which is useful for physical conditioning, although not used in real-life operations. Team members should jog a couple of miles each day, because this is aerobic exercise and useful for general health and conditioning.

MARKSMANSHIP

As we've seen from the section on operational conditions, human anatomy requires the ability to

place the shots within a smaller than three-inch circle at one hundred yards. Holding to a one-inch circle is even better, and is a good team goal. It all has to start with the basics, if the trainee isn't sophisticated regarding firearms.

As a start, he should know his weapon intimately. He should be familiar enough with it to load and unload it, clear minor malfunctions, and perform basic maintenance, such as cleaning. A basic knowledge of ballistics and bullet effects also helps. The instructor should help him zero his rifle at 100 yards, the most useful distance for training.

Cleaning is worth special attention. It probably will be necessary to re-indoctrinate the student regarding cleaning. If he has a hunting background, he's probably picked up the tradition of the "fouling shot" from other hunters. He also has been exposed to the ammunition companies' advertisements that modern non-corrosive ammunition won't rot the bore if it's not cleaned immediately. This can induce a complacent attitude. It's essential to make the student understand that cleaning the bore after every few shots is the best practice. Ten is the commonly-accepted number, but it does no harm to clean more often. In qualification, if the program requires one shot at each of several ranges, the student should clean his weapon after every shot, because this is how he'll be going on a callout.

Dry fire is a commonly-neglected technique. It's worthwhile for the sniper because it builds familiarity with the weapon. A callout can come at any hour, and there may not be enough light for the sniper to see what he's doing. He should be able to unpack his rifle from the case, load the magazine, and set the weapon up ready for firing without having to look at every step.

Training should also cover trouble-shooting. The student should understand and be able to recognize what can go wrong with his weapon, and how to check for defects such as loose scope mounts and malfunctions in the riflescope.

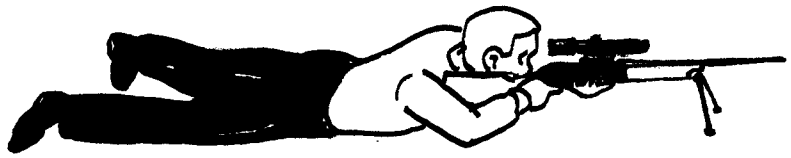
The essential components of marksmanship are part of the lesson. They include how to take a stable position, and how to breathe. Part of this is breathing while holding the rifle on a target. This will allow him to see how, if his support of the rifle is faulty, the crosshairs will move to the side, as well as up and down, as he breathes. The student must learn to control his breathing so that he can pause to take his shot. He must also learn that centering the eye in the field of the scope sight helps prevent parallax errors.

To make the student understand parallax, it's helpful to place the weapon on a sturdy table or bench, sighted on a target at fifty or one hundred yards. Have the student place his eye behind the scope, without touching the weapon, and move his head from side to side. He'll be able to see the crosshairs move over the target as he moves his head, even with the rear parallax adjustment taken up properly. This will demonstrate the need to center the eye in the field.

Trigger pull has to be learned, rather than taught. It's possible to explain it in a classroom, but the student must make the effort to master the skill. It's a mistake to teach the student that he must press so gradually that he won't know when the shot will go off. In this application, he must know when it goes. Pulling the trigger upon command and with enough control to avoid jarring the weapon is the important skill.

The student should also understand several basic shooting positions that have a place in police sniper work:

The prone position has the shooter with his legs spread, support elbow directly under the weapon, the butt securely in the hollow of his shoulder, and his cheek against the stock.



The bipod position is almost like the prone position, but much more stable. The bipod supports the weapon, rather than the left forearm. Note that a sandbag is often steadier than a bipod, and that it offers much more flexibility.

The sitting support position. This is probably the most likely position that a police sniper working in the city will have to use. The main advantage of this position is that it's very flexible and can be comfortable for very long periods.

There are several critical points to watch with all of these positions:

- The shouldering of the weapon is critical because of muzzle jump. If the buttstock isn't solidly against the shoulder for each shot, the rifle will recoil more or less, with the muzzle jumping by varying amounts. This will spoil the precision of the shots.
- The "spot weld," with the cheek solidly against the stock, is important for a consistent sight picture. Some marksmen find that firing with a gas mask spoils their aim because they can't get a good spot weld.
- "Cant" means tilting the rifle right or left, which places the sight to the right or left of the barrel. Because of the geometry of the sighting system, with convergence many yards in front of the muzzle, "canting" the weapon will throw the impact point to the side, as well as affect the elevation. Keeping a solid shouldering of the butt and a good spot weld helps avoid cant. The scope reticle, with its vertical and horizontal wires, provides references for spotting cant, and the shooter can make his correction before firing the shot.
- The off-hand is usually best placed under the butt of the rifle, helping to hold it in the shoulder. This gives extra steadiness when the forestock is resting on a sandbag. Another way to use the other arm is to grip the right bicep lightly, forming a cradle for the butt.
- Unless the student has a strong liking for the bipod, the instructor should discourage its use. A bipod can come loose at a critical moment, snag on bushes, and it adds weight to the rifle.

The mechanical operation of a bipod usually is less than satisfactory, and a sandbag or beanbag is simpler, cheaper, and more practical.

WORKING TOWARDS PROFICIENCY

Once the student has the basics, he should start developing his intermediate skills. Each firing session should start with a cold shot "for the record," because this is how he'll have to fire in the field. Firing subsequent shots will show if the rifle has a shift in impact point as it warms up. This should be logged and be a part of the permanent record.

This is also the time for practice at different ranges, both for the experience and to allow the student to make up his elevation and windage cards. A short-cut to doing this is the Sierra ballistics program.

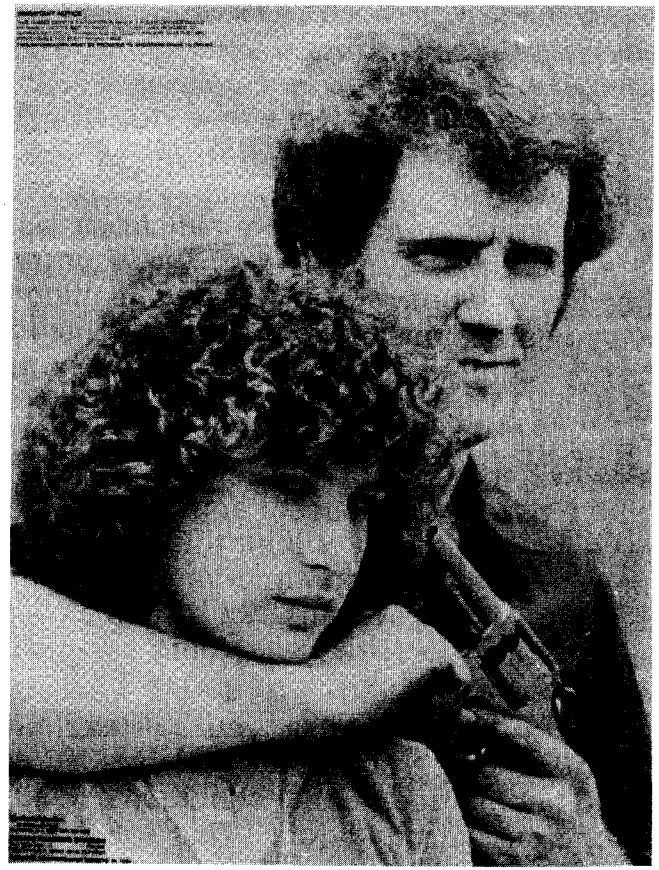
Sierra Bullets has a computer program for calculating exterior ballistics. This calculates bullet drop, the effect of wind, correction needed for up-hill and down-hill shooting, and other factors. This program is made for the IBM, Apple, and Commodore computers, and costs $199.00. Available from:

SIERRA BULLETS
10532 South Painter Avenue
Santa Fe Springs, CA 90670
Phone: (800) 223-8799
Attn: Bob Ellison

TRAINING TARGETS

Standard "bulls-eye" targets are suitable for basic training and for sighting-in. For advanced training,

other types of targets are necessary. The trend has been towards human figure targets, which is a step forward. Some human form targets are brightly-colored cartoons or four-color photographs. These are better yet, but not the best for the purpose. In real life, people usually don't appear in such brilliant colors, and the light is often poor. In low light, the targets often appear to be monochrome, as colors are not easily distinguishable.



The Speedwell "Hostage" Target is excellent for advanced training. It presents a realistic situation

with photographic images of the suspect and his hostage. The target is printed in black and white, and has very low contrast. Even in daylight, it's duller-looking than usual, giving the effect of a dimly-lit target. These are available from:

SPEEDWELL CORP.
40 Rockwood Place
Englewood, NJ 07631
Phone: (201) 560-7171
Attn: Mike Panos

QUALIFICATION

The type and frequency of qualification will vary with the agency and the area of the country. The team leader, or whoever's in charge of setting proficiency standards, must keep in mind that the level of proficiency required of the police marksman must be related to the task. There's a serious liability problem in sending out someone who hasn't documented his skill. For example, a rural police agency that has to deal with a barricaded suspect at five hundred yards will be caught short if all of their training and qualifications take place on a hundred-yard range. In most cases, it won't come to court, but if such a case ever does, the lack of long-range training and qualification will appear to be clear negligence.

If you're the team leader, you can examine the records of callouts you've had over the last several years and list the operational conditions. Make a list of the operational conditions. This will give you a guide to establishing conditions for qualification. More importantly, it will provide documentation that your training and qualification standards are realistic

and suited to the task. Here's a short checklist of some points to cover:

RANGE - At what ranges have your snipers had to fire or be prepared to fire?

LIGHT - How many of the callouts have been at night? More importantly, what's policy on night shots? Are you authorized to give a green light when it's not daytime?

ADVERSE CONDITIONS - Have there been callouts during storms, snow and ice? What's the practice regarding sniping when the weather's very bad? Is it very windy in your area?

FIRING POSITIONS - There may not be a record of the firing position taken by the police snipers, but questioning those who have been on callouts can provide this information.

From this, you can see that advanced training for your snipers has to include firing under various conditions. They should be able to make some night shots unless you can reach an agreement with suspects not to take hostages after nightfall. If felons in your area operate only in bright and sunny weather you can likewise ignore any adverse conditions. Otherwise, you'll have to train and qualify when the weather is poor.

An intermediate standard for qualification is placing five shots in a two-inch circle from a rest or from the prone position at 100 yards. This applies only to winds less than ten miles per hour. Remember, a ten mph wind will push a Sierra .308 168-grain Matchking bullet off .68 inches from the point of aim. In such a case, a two-inch group is realistic, but the tighter one-inch group will be very difficult, except with a little Kentucky Windage and some luck.

THE QUALIFICATION COURSE

This should come as close as possible to operational conditions. This is why firing groups for qualification is both pointless and stupid. Suspects don't stand still while a sniper fires five shots into their chests.

The course should be one cold shot on a qualification target at each of several different ranges. 100, 200, and 300 yards is a good start. The cold shots should be from different shooting positions each time. The sniper should "call" his shot, and if something happened to make him miss, such as a sneeze, he can discard that target. Additionally, there should be a couple of cold shots on a photographic target at unknown ranges. At closer ranges, these should be head shots, but at longer ranges they may be center of mass shots, consistent with the sniper's ability.

This last point is critically important. Apart from the rule that a sniper should meet certain minimal performance levels, snipers will vary in skill. If you're the team leader, you have to assign tasks consistent with your members' abilities. Qualification documents each sniper's skill, and supports you if ever you have to defend a decision in court.

How many shots? There's no need for a specific number of shots. It's also purposeless to design a qualification course to include a round number, such as ten or twenty.

The reason for mixing the types of targets used in qualification is to avoid the mechanical and repetitious task of placing shots on precisely-defined points, as we find on formal qualification bullseyes. Suspects don't paste discs to their chests or foreheads, and the sniper must be able to demonstrate

the ability to place his shots where there's no clearly defined aiming point.

What about the sniper who fails qualification? How do we handle that? There's a logical way that doesn't conflict with operational objectives or departmental policy. The sniper who fails qualification usually doesn't fail totally, missing with every shot. He'll probably just miss at the longer ranges. The team leader notes this, and assigns the sniper to an extra practice session and temporarily restricts his assignments to targets which he has hit.

How often should qualification be? There are really two answers to this. One is that frequency of qualification should be the same or more frequent as other agencies in the area. This is to avoid the appearance of laxity in case of a lawsuit.

The other, and truly more important reason, has to do with skill. If you're the team leader, you'll have to decide how satisfied you are with your snipers' skills. How often should they practice to keep their skill? How often should they qualify to prove to you that they are still up to the mark?

As we've already discussed, you need to know what each of your snipers can do. There will be some differences between them, and these may affect the decisions you make in a callout. The nature of callouts precludes selecting the sniper of your choice, but at least you'll know better than to assign a shot beyond a particular sniper's skill.

You can make a good case for monthly qualification. Of course, the largest agencies have weekly training for their SWAT teams, but scheduling problems often make this impossible for small and medium-size departments. Still, it should be possible

to find an hour or two each month for practice and qualification.

Police agencies repeatedly make the mistake of holding most of their qualifications in daylight and in good weather. This should not be your policy.

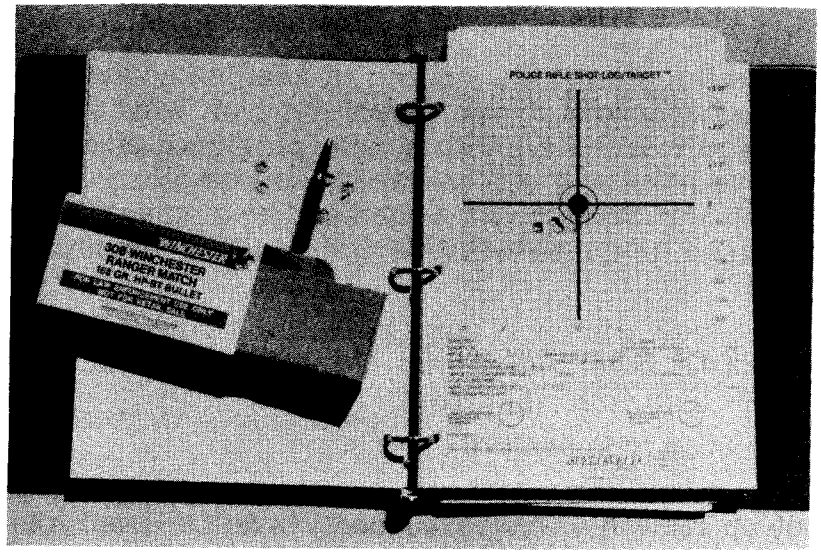
A lot depends on your imagination and willingness to take an extra step. If one of your sniper teams is on "graveyard," and it's quiet enough to allow you to take them out to the range, you can hold a surprise qualification. Firing by the light of car headlights is good practice, and if the weather's bad it can give them a taste of truly adverse conditions that may occur for real one day. This avoids building a corps of "sunshine soldiers" who are so accustomed to ideal conditions that their performance suffers when the going gets tough.

Documentation is critical. Each qualification target should go in the file, with notations regarding date, time and conditions. Both the shooter's and the range officer's or supervisor's signatures should also be on the target.

One useful system for recording and preserving each sniper's qualification scores is the Speedwell "Shot-Log." This is a loose-leaf binder with qualification targets printed on heavy 8½" x 11" card stock. The target pages have ¼" grids to make it easy to plot shots off zero, and spaces for filling in information about the shooter and the conditions. The shooter records the date, time, weapon, ammunition, light conditions, temperature, wind direction and speed, and other relevant information. The binder has a thermometer attached to the inside cover as a convenience.

In small agencies, there may not be enough time for frequent practice. The snipers should, as a

minimum, have a dry firing session at least once a week. This can be very informal, and even at home. Sniping must remain a finely-honed skill, and the officers must not lose the sharp edge.



One good publication to read for the latest information on subjects of interest to the police marksman is the one by that name, *Police Marksman,* the organ of the Police Marksman Association. This is a bi-monthly slick magazine available only by membership in the organization. The fee is $15.95 per year. The address is:

POLICE MARKSMAN ASSOCIATION
PO Box 17690
Montgomery, AL 36117-0690

SELF-TRAINING

To keep the fine edge, it's necessary to train every day. Training doesn't have to involve live fire, or even picking up a weapon each day. One technique is mental rehearsal of sniping scenarios. Using rehearsals to fill in time while on patrol is one way.[2] Rehearsing while jogging is another.[3]

Use the time while jogging to imagine scenarios. Set up situations in your mind and plan what you'd do. You might start with simple problems, such as how you'd cope if you had to sit or lie on a very hard surface for many hours while keeping a vigil. Would you send for a blanket? What if there were nobody to send?

Another situation might involve trying to stay awake for a very long time. Do you keep a pack of NO-DOZ in your rifle case?

You can then explore other scenarios:

There are times while on patrol when you'll see a set-up for a barricaded suspect. Imagine what you would do if your task were to "take him out" in various scenarios. Imagine him on the street in front of the door with a hostage shielding him. Change the scenario and imagine him in an upstairs window firing at officers he can see. Change the scenario once more and imagine that your task is to "take him out" while he's deep inside a room, barely visible in the half-light.

When you imagine these scenarios, ask yourself:

- "Where would I set up a firing position?"
- "Would there be a clear shot?"
- "How dangerous would it be to others for me to fire?"

- "Would there be enough light inside the room to see him?"
- "What about positive identification?"
- "Any other people possibly to confuse with the suspect?"
- "Would I be justified in refusing a green light?"

Another question can become very real during a long vigil:

- "Where do I find a toilet around here?"

Maintaining your skill goes far beyond the initial training. It requires persistent effort and dedication. If you really like what you do, you shouldn't have any problem in finding the time and energy for this.

NOTES

1. Sager vs. City of Woodland Park, CO, 1982.
2. *The Pride Method,* by John Pride and Jon Winokur, Pacific Palisades, CA, Potshot Press, 1987, p. 53.
3. *Ibid,* p. 40.

WEAPONS

There's no truly established "sniper's rifle" for American police. Traditionally, when rifles have been needed, officers have brought in their personal weapons. In certain parts of this country, this is still everyday practice. Officers operating one-man cars on remote patrol may carry additional weapons of their choice because their agencies do not issue rifles to them. Typically, a hunting rifle such as the Ruger Mini-14 will fill this role. The sights may be iron or optical, as there are no guidelines, and officers choose the type with which they feel the more comfortable.

This practice isn't adequate for the SWAT sniper. He needs a weapon of proven reliability and accuracy, and must maintain that accuracy by test-firing at regular intervals. For him the choice of weapons is more critical.

ACCURACY

As we've seen in previous sections of this book, extreme precision is usually unnecessary, and certainly can be expensive. Because most incidents calling for a police sniper involve ranges shorter than 100 yards, a match-grade rifle isn't essential.

Still, it's possible to pay for extreme accuracy and not get it. There are rifles being marketed as "police sniper" rifles, but the only factor which they have in common is a high price. How, then, does a police sniper or SWAT team commander go about getting a sufficiently accurate rifle at a reasonable price?

SHOPPING FOR A RIFLE

The first, and probably most important, fact about sniper's rifles is that they're manufactured objects, and a production run can have both "jewels" and "lemons." In other instances, the design is wrong. This is why we occasionally hear through the grapevine about an agency's purchasing widely-touted "sniper's rifles" that don't perform as expected. In one instance, the manufacturer accepted the return of the rifles in exchange for submachine guns.[1] Other departments are not as lucky. A small department may find its complaints ignored, or the manufacturer may reply that accuracy is also a function of the shooter (which is true) to avoid making good on the defect.

We can lay out a few general principles as a guide in procuring suitable weapons. You'll find these rules of thumb very helpful, but they're no substitute for being flexible and open-minded when looking for rifles for your sniper teams.

- Be realistic about costs and features. The least costly weapons are bolt-action rifles. Scopes with many "bells and whistles" are also more costly than the "Plain Jane" models, whatever the alleged benefits of the extra features may be.
- "Gas guns" are inherently less accurate than bolt-action rifles. A semi-auto has more moving

parts and more chances of malfunctions than a simple weapon. Building a gas gun with the same accuracy as a bolt-action weapon takes much more money.

- Any rifle, any model, any brand, may be defective. The manufacturer may have had a bad day. The reputation of a rifle in others' hands is a guide, not a guarantee. Still less important is what you read about it in a gun magazine. Only the hardware that winds up in your hands is important. This is why test-firing before making a final commitment is crucial.
- More important than the manufacturer's reputation for accuracy is his reputation regarding customer complaints. When asking other SWAT commanders about their experiences with rifles, be sure to ask about this. A manufacturer who stands behind his product is a better source than one who offers more bells and whistles.
- Before buying, obtain information regarding the guarantee of accuracy claimed by the manufacturer. Establish at the outset how he intends to handle any problems. The best plan is a trial period with an invoice only if the rifles are satisfactory. You may, however, have to settle for a money-back guarantee.
- Because ammunition is also an important factor in rifle accuracy, obtain information from the seller regarding which brand and type of cartridges were used in setting out any claims for accuracy. Get this in writing, and use this type of ammunition in testing the rifles. If the type of ammunition specified is unsuitable for your needs, try to obtain information about the weapon's performance with other types.

- To be sure of not being hurt in the transaction, arrange in advance with your agency's financial officer to withhold paying the invoice until you release the funds. To be ethical, advise the seller of this arrangement when negotiating the sale. Tell him that at the end of the trial period, he'll either get his check or get his guns back.
- Be open-minded enough to consider buying second-hand weapons. In some small departments, this can help with the budget squeeze. Another aspect of buying second-hand is that arranging for a test-fire before buying is much easier. This alone can save a lot of time and a lot of aggravation.

  A good-quality, accurate second-hand rifle is often a better buy than a new model. With modern mass-produced goods, we find similar weapons that perform very differently, even if they have adjacent serial numbers.
- Obtain feedback from your snipers regarding their preferences. They're the ones who will be using the hardware, and it's important that they feel comfortable with the choice.
- Consider the advantage of dealing with a local manufacturer. In this country, there are some small manufacturers of very high-precision rifles. Having one close by means that service and repairs may be quickly available. Everything depends on the company and the person who manages it, though. Some small custom manufacturers have acquired miserable reputations for delivery. Custom gunsmiths and barrelmakers operating one-man shops seem to be the worst.

- Don't get a "set trigger." This is a double trigger designed for target shooters but unsuitable for police or military purposes. The first trigger "sets" the second, which has a let-off of a few ounces, much too light for operational use.
- A trigger pull of two or three pounds is about right for the police marksman. Above all, it must be crisp. The commonly-accepted dictum that the trigger should "break" by surprise doesn't apply here. You need to know exactly when the shot will go off, for obvious reasons.
- Don't get too involved with barrel bedding, special stocks, and other custom "accuracy jobs." If the weapon doesn't shoot adequately right out of the box, you may wind up spending more time and money than it's worth to tune it up. In the end, the rifle still may not shoot well. Limit your gunsmithing to free-floating the barrel. Let's get into that and see why.

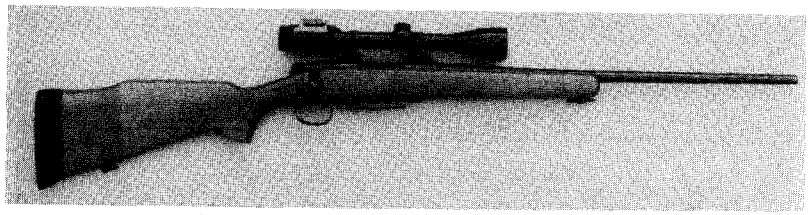
What is essential is that the rifle hold its zero so that the sniper will be able to place his shot where he wants it at any time. This requirement can be very difficult to meet. Wood and other materials used for rifle stocks expand with temperature, and wood absorbs moisture, which also causes expansion. If the material presses on the barrel, it will cause a change in the point of impact. To correct this, it's necessary to "free-float" the barrel. This means relieving the forestock so that no wood touches the barrel. Good rifle designs include this feature. If the barrels of the rifles you obtain are not free-floating, it's necessary to make them so by removing wood from the barrel channel in the stock. If you or the departmental armorer have the skill, do it. If not, have it done by a gunsmith, preferably one who services the local bench-rest shooters or varmint hunters.

When removing wood from the barrel channel, it's essential to coat the bare wood surface with a waterproof sealer, to avoid leaving an opening for moisture. After this, the rifle may not necessarily be more accurate, but it will hold its zero longer.

SPECIFIC MODELS

There are a few rifles worth discussion because they've proven themselves repeatedly. This list is definitely not complete, because space doesn't allow listing every good weapon. If you don't find your favorite here, don't be discouraged, and please don't assume that there's anything necessarily wrong with it because it's not listed.

REMINGTON MODEL 788

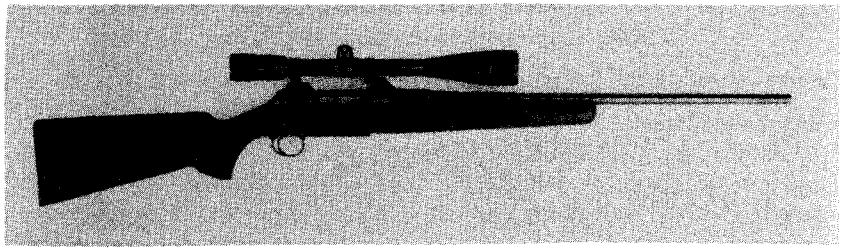


This is a discontinued model. Its great virtue is accuracy at a low price. This bolt-action model was made in a number of calibers, including 222 Remington, 22-250, 6mm Remington, 243 Winchester, 30-30, 308 Winchester, and 44 Magnum. Most models had 22" barrels and the receivers are drilled for scope mounts.

Magazine capacity varies with the caliber, ranging between four and five cartridges. Weight ranges between 7 and 7½ lbs. depending on caliber. The nine-lug bolt locks into the barrel, not the receiver, because the lugs are on the front of the bolt. This aids accuracy greatly. However, it's necessary to relieve the barrel channel to avoid having wood touch the barrel.

This weapon is able to give genuine 1 M.O.A. groups with several brands of ammunition. Because it's discontinued, the only ones now available are second-hand, which is an excellent opportunity to ask for a test-fire before purchase. Price should be in the one hundred dollar range.

SAUER MODEL 200



This is a bolt-action, detachable stock hunting rifle with interchangeable barrels. This feature is useless for a police sniper because of the need for repeating the sighting-in each time the barrel is removed. Calibers available are 243 Winchester, 25-06, 270 Winchester, 30-06, 308 Winchester, and several European calibers. The rifle has a three-round magazine and a 24" barrel. It weighs about 9 lbs. One of this weapon's strong points is that the bolt locks into the barrel because the lugs are on the front of the

bolt, not the rear. Another is that the barrel is free-floating. The forestock attaches to the receiver with one hex socket bolt, and doesn't touch the barrel. Because of the design, there's also no need to glass-bed the receiver.

This weapon has delivered groups smaller than 1 M.O.A. with factory ammunition, and ½ M.O.A. with hand-loads. The best configuration is with the single-stage trigger, plain scope mounts, and in caliber 308 Winchester. The rifle is exceptionally well-finished, and this fine machining accounts for much of the cost, which is in the $1000 bracket.

RUGER M77

This is a popular bolt-action rifle available in several popular calibers including .308 Winchester. Some of these have delivered very tight groups right out of the box. This is a model worth considering. List price is $440. Available from:

STURM, RUGER, & CO.
56 Lacey Place
Southport, CT 06490
Phone: (203) 259-7843

REMINGTON MODEL 700 ADL

This weapon has been used by the U. S. Marine Corps and other official bodies as a sniper weapon. In some instances, the Model 700 action has served as a basis for custom rifles when mated with specially made barrels. Many bolt-action Model 700s have delivered one-inch groups at 100 yards with the right scope and ammo. The ADL is the stripped-down

version of the BDL, and costs about $400 This is enough. There's no need for stripes and other trim.

BIPOD

The bipod is becoming popular with police marksmen. There are several models available, and these vary greatly in quality and price.

The military "clothespin" bipod, or its civilian imitators, isn't worth the trouble because it clamps onto the barrel. Its only advantage is that it can swivel to compensate for slanting ground. The legs aren't individually adjustable, though, and this is a serious drawback. If the rifle has a bipod lug on the forestock, this arrangement can be made to work.

Any bipod for sniping must not touch the barrel. This is because anything that touches the barrel will change the point of impact.

The Harris bipod is an adjustable folding bipod with legs that lock in a number of positions. A spring returns the leg to retracted position when the user presses the release.

Frankly, a better accessory is a beanbag. This adapts to any contour and the shooter can adjust it to fit. Furthermore, it's possible to use two or more when it's necessary to get more elevation. Another advantage of a beanbag is that, unlike metal bipods, it's harmonically "dead." It has no resonance, a factor few consider when they hang accessories on their rifles.

Beanbags are cheap and light, and good substitutes for sandbags. The simplest way is to make them. The legs from a pair of old trousers work perfectly. Cut off a couple of foot-long sections and

fill them with dry pinto beans. Don't fill them completely, but leave a little slack for adjustment, and sew the ends of the bags shut. This method provides several beanbags that are much lighter than sandbags, yet as useful because they're adjustable rests.

THE SUPPRESSED WEAPON FOR SPECIAL APPLICATIONS

A sound suppressor, popularly known as a "silencer," deadens the sound of the discharge. The typical suppressor is a large-diameter tube screwed onto the end of the barrel. In some cases, the suppressor may be built into the weapon as part of the barrel assembly.

A suppressor serves several purposes. It makes the sound of the shot more difficult to pin-point. At a distance, it blends into background noise. This makes it possible to "take out" suspects without others hearing the shots. The suppressor also eliminates muzzle flash, an important feature for night operations. A suppressed weapon also has low recoil, which is important to some shooters.

The suppressor moderates the report in several ways. One is by a series of baffles which cool, deflect and slow down the propellant gas. Another technique, in weapons with built-in suppressors, is to bleed off part of the propellant gas through holes drilled into the barrel. The purpose is to reduce the amount of gas coming out the muzzle, and in some cases to reduce the velocity of the ammunition to below sonic speed.

Some suppressed weapons are designed to fire standard ammunition but incorporate gas bleed

holes to reduce the velocity. We find this usually in weapons designed for cartridges in the trans-sonic range. Two such cartridges are the .22 Long Rifle and the 9mm Luger. This technique is useless in rifles chambered for supersonic cartridges because it won't bleed enough gas to cut the bullet's velocity below sonic speed.

Another technique of suppressing the sound of the shot is to use sub-sonic ammunition. This technique is applicable to all cartridges. There are commercially available "target" .22 Long Rifle loads. In the 9mm, which is a pistol and submachine gun cartridge, there are heavy-bullet sub-sonic loads. These usually fire a 130-grain bullet at 1000 fps or so. In the .308, sub-sonic loads fire a 180 to 220-grain bullet at about 1050 fps.

Obviously, the slow-moving subsonic bullet will have a much steeper trajectory than the faster version. It will also have less hitting power, even with the heavier bullet. Bullet weight doesn't make up for the kinetic energy lost with decreased velocity. One benefit of the slower bullet is less over-penetration.

There are several sources for suppressors. All suppressors are over-priced. This is why it's important to think carefully before procuring one.

NOTES

1. This happened to a very well funded police agency in the author's home state. Because this agency is one of the largest in the state, its complaints could not be dismissed without severe repercussions and the manufacturer had to provide satisfaction.

AMMUNITION

The choice of ammunition is not as critical as it might seem. Let's be realistic. What's the likely range at which you're going to fire? How large is your target? This is not to say that you can be casual about ammunition or accuracy. On the contrary, you need to know what your ammunition will do at various ranges. You just don't need to shoot a suspect's shirt buttons off at a thousand yards in most situations.

It's also helpful to keep other factors in perspective. The U.S. Army Advanced Marksmanship Training Unit advises using one or the other of two calibers, the .222 Remington and the U.S. .30 caliber, in either .308 or .30-06.[1] The main reason behind their choice is the availability of cartridges with full metal jackets. The .222 Remington has not become a widely-used sniper cartridge, possibly because the full metal jacket requirement applies only to military units.

For years, there's been a misconception regarding the Geneva Convention and the ban on "dum-dum" bullets. For the police officer who isn't familiar with the situation, a quick review is necessary.

FULL METAL JACKET?

In 1897, the Hague Disarmament Conference included a prohibition on expanding bullets, as part of

its objective of "humanizing" war. This was the first time such a requirement had formed a part of an international treaty, and it got mentioned in various other treaties that followed, but not the Geneva Convention of 1925, which is the one people usually mean when they use the term "Geneva Convention." This one dealt mainly with prisoners of war.

The ban on expanding bullets applies only to the military because the Hague Convention concerned only wars between nations, and specifically excluded police and internal security forces, and civil wars. Generally, the Hague Convention was unsuccessful, because it also banned poison gas, attacks on civilians, and bombing from aircraft, all of which were used copiously in the wars that followed.

The misunderstanding regarding soft-point and hollow-point bullets persists to this day, and there are people who believe that police are forbidden to use them because of some treaty or law. This is totally untrue in this country, and American police may use whatever ammunition they deem desirable. There are also objections from civil liberties groups on the grounds of excessive cruelty. This type of objection comes from people of the "shoot them but don't injure them" school of thought, and doesn't warrant further discussion.

ACCURACY

How much accuracy do you need? The commonly-accepted standard is one minute of angle accuracy. In practical terms, this means that a five-shot group will all land in a one-inch circle on the target at one hundred yards. At fifty yards, this means all will fall

in a half-inch circle. You can see that this is superlative accuracy at normal police sniping ranges.

Is more accuracy possible? If so, is it worth seeking? There are rifle and ammunition combinations that can place five shots in a circle much smaller than an inch at one hundred yards, and some remarkable shooting has been done with these at extreme ranges. The problem these pose for the police sniper

is that if he misses a shot at extreme range, he doesn't lose a point, but may lose a life.

Extreme accuracy at extreme ranges is possible under certain conditions. High-power match shooters are allowed sighting-in and warm-up shots before a match. These enable them to check out their weapons and also to monitor wind conditions. The police marksman must go in cold, in every sense of the word.

One factor that the police marksman must consider is the availability of sufficiently accurate ammunition. In caliber .308 there are at least two manufacturers, Winchester and Federal, offering extremely accurate ammunition. Both use the Sierra 168-grain hollow-point boat-tail bullet, which has long had a reputation for extreme accuracy.

POWER

How much power is necessary in a sniper's rifle? Not surprisingly, some people disagree about this requirement, just as others do about handgun power. There's less reason for concern over rifle bullet power than there is about handgun bullets because rifle bullets have a different order of power. The kinetic energy of pistol bullets is usually on the order of several hundred foot-pounds, while rifle bullets usually have several thousand foot-pounds.

According to Winchester's published data, the .357 Magnum 125-grain handgun load delivers 583 foot-pounds at the muzzle. The .223 rifle cartridge, with a 53-grain bullet, provides 1305 foot-pounds. At 100 yards, it still has 978 foot-pounds. The .308 Winchester cartridge, with a 180-grain Silvertip bullet,

had 2743 foot-pounds of muzzle energy and at 100 yards still has 2288 foot-pounds.

There should be no question that rifle ammunition can inflict a serious and incapacitating wound if it hits the right spot. This is where your skill comes in. You have to become familiar with the various aiming points on the human body, and have a realistic appraisal of your ability to hit them at various ranges.

Related to the concept of power is "hydrostatic shock." This is the shock wave caused in a liquid or gel (such as human or animal protoplasm) when a bullet strikes. The shock wave is what causes the "temporary cavity" that damages tissue beyond the path of the bullet.

Too much power can be a handicap. An overly powerful caliber, such as those used on African game, can cause problems because the recoil is more than most people can handle. There's also the problem of over-penetration. A bullet that goes through the suspect and ten walls doesn't usually belong in police work.

WIND-BUCKING ABILITY

The main problem at very long ranges is wind. It's possible to compensate for trajectory, but wind is often unpredictable. The shooter may have a ten mph cross-wind at his firing position, but it may be twenty mph in the other direction down-range.

The heavier the bullet, the better it resists cross-wind deflection. As a practical matter, the .308 round offers a good compromise between power, recoil, and wind-bucking ability. We'll take a close look at cross-wind effects in the appendix on ballistics.

LIABILITY

A number of police marksmen, being firearm hobbyists, reload ammunition. Although factory ammunition is improving significantly, it's still possible for a competent reloader to produce a handload that gives tighter groups from a particular weapon than any factory ammo. This is because the hand-loader has access to some superb bullets, such as the Sierra 168-grain match hollow-point boat-tail bullet. Ammo manufacturers are starting to catch up, and at least one factory load, the Federal 168-grain match, uses this bullet.

The big advantage the hand-loader retains, and will continue to retain, is that he can tailor his load to the weapon. For example, factory ammo has to meet SAAMI (Sporting Arms and Ammunition Manufacturers Institutes) specifications. Among other things, the standards control bullet seating depth and overall cartridge length. The hand-loader can set the bullet's seating depth so that the bullet contacts the rifling. Eliminating bullet "jump" tends to increase accuracy, but the cartridge's overall length may be more than called out in the SAAMI specs.

The hand-loader can also produce ammunition to meet special situations. For example, Sierra makes a range of "Matchking" bullets from 150 grains to 220 grains. The heavier bullets have better wind-bucking ability, although steeper trajectories. An experienced hand-loader may decide that a custom load, using one of the heavier bullets, would be more suitable for local conditions than the factory offerings.

Unfortunately, there's more to the story than that. There's also the problem of liability. If ever there's a lawsuit, and the question of ammunition performance

or quality enters into it, it's better to have a large manufacturer with whom to share the liability. A major ammunition manufacturer has a legal staff, and expert ballisticians to testify in its defense. On the other hand, the officer who uses his hand-loads is almost defenseless. This is often the deciding argument in the recommendation to use factory ammunition for SWAT and other police operations.

AMMUNITION PROCUREMENT

Ammunition is manufactured in batches, called "lots," and each lot is slightly different from others of the same type and brand. Some of these differences are too slight to notice, while others can affect accuracy significantly. A change in brand, bullet type, weight, or even lot can affect the impact point.

Because each lot of ammunition is different, the weapons must be checked for zero when starting a new lot. The new ammunition may not hit the same point of impact as the old cartridges. To minimize the need for checking and possibly changing zero, it's best to order ammunition in the largest quantities possible. A year's supply is the minimum. More is better, up to about five years, if there's enough room to store it. The purchase order should specify that the entire quantity ordered shall be of the same "lot number." This is marked on each box of ammunition, usually on the label or on the flap.

Controlling the conditions under which you store the ammunition is critical. Ammunition doesn't deteriorate sharply under most conditions, but for best storage and shelf life, it should be in a cool dry room. Temperature should be about seventy degrees Fahrenheit, and the humidity should be less than fifty

percent. Ammunition has survived long storage under adverse conditions, but because this is high-performance ammunition, you should not take this for granted.

What about "ready ammo?" This is the supply that the sniper carries with him, along with his weapon, in the trunk of his car. While ammunition is very hardy, and there have been instances of cartridges stored in hot environments still firing after many years, you can't depend on carelessly stored ammunition for accuracy. The bullet will come out of the end of the barrel, but at what velocity?

If the ammunition stays in the trunk of the car, it should be changed or "rotated" periodically. The rotation period depends on the climate and, more often, on the qualification requirement. In very hot climates, such as in the "sun belt," ammunition deterioration is more likely than in cold climates.

The sniper who regularly qualifies should use the cartridges from his ready supply, and replace it with freshly-issued ammunition. Because of the sniper's role, he's not likely to fire even one box of ammo on a callout, and a ready supply of two or three boxes will handle all contingencies.

NOTES

1. *Counter Sniper Guide,* Compiled by the U.S. Army Advanced Marksmanship Training Unit, commercially reprinted by Paladin press, Boulder, CO.

HANDLOADING: LOW-COST PRACTICE AMMO

Although for various reasons centering around liability it's best to use factory ammunition for qualifications and for operations, training and practice ammunition can be ballistically similar to factory, yet hand-loaded for economy.

CASES

Use only cases fired through the particular weapon for best results. Chamber sizes differ between weapons, and cases fired from other rifles may not give the most accurate cartridges.

Trim the cases each time you reload. This is especially true if you use two or more brands of cases. Each brand is made of brass of a slightly different composition and hardness, and will stretch at a different rate.

How much to trim? It doesn't really matter, as long as it's within factory specifications. The reason? The neck is just to hold the bullet. Too long a neck, however, can go forward into the rifling. If this happens, it will be hard to close the bolt, and your chamber pressure will be higher.

Another reason for trimming is to keep the case mouths uniform. If you inspect the cases after trimming, you'll find that some are trimmed only part-way

around the case mouth. This is because some brass stretches unevenly. Reloading such a case would cause an uneven pull on the bullet.

If you use different brands of cases, segregate your brass by brand. You may have the same bullet, primer, and powder in cases of two different brands, but don't expect them to shoot to the same impact point. It's best to use only one brand, and to obtain these from fired factory ammunition you use.

Resize your cases fully. It's true that neck-sizing alone will often be the best way for bench-rest shooters, you want to duplicate factory ammunition. This means bringing the case back as close to original size as possible. If you're reloading for more than one rifle, even of the same make and model, you may find that cases from one won't fit in the other's chamber unless you totally resize them.

For the best precision, use a case gauge. This is a device to measure if the case is properly sized and to check headspace. An instruction sheet comes with the gauge, giving detailed information on its use. Spot-check your resizing with a gauge at the start of every loading session.

PRIMERS

If possible, use the same brand primers as in the factory cartridges. If this isn't possible, Winchester and Federal primers both produce accurate loads.

Is it necessary to use "Match" primers? Not necessarily. You'll probably find that you can't tell the difference between them and ordinary primers when you fire your rifle.

Is it necessary to clean the primer pockets each time? Again, no. Primers aren't the same as they were years ago, and don't leave heavy deposits in the cases or primer pockets.

You'll also find that tumbling your cases after sizing, to remove the lube, will also clean the primer pockets. Inspect the primer pockets before re-priming to be sure that a piece of tumbling medium hasn't lodged inside the pocket or the flash hole.

Seat primers uniformly. This point is easy to overlook. Incorrectly seated and uneven primers will give erratic ignition. This is more important than using match primers.

BULLETS

The bullet to use is the closest you can find to the one used in factory ammunition. In the case of the .308, the best bullet is the Sierra 168-grain Match Hollow-point Boat-tail. This is the bullet used in the Federal factory cartridge and the Winchester Ranger .308, made for law enforcement use. In other calibers, you'll find that bullet manufacturers make such an array that finding a close match won't be difficult.

Seat the bullets so that overall cartridge length is the same as the factory cartridge.

POWDER

Use a reloading manual to find a load that gives the same velocity as the factory cartridge. You may be surprised to find that high-precision factory ammo isn't loaded "hot." This is because the best accuracy is obtained from loading to less than maximum

velocity. This is why you must resist the temptation to add a few more feet per second to your reloads. Stick as closely as you can to factory ballistics. If you have a chronograph, use it. If not, borrow one.

Using the Sierra 168-grain Matchking bullet, a very accurate load is 45 grains of Winchester #760 ball powder. This gives about 2500 fps from the muzzle. This load has delivered smaller than ½" groups at 100 yards. The "factory duplication load" is 49.8 grains of Winchester #760, to give 2600 fps velocity.

For longer-range shooting, a heavier bullet might be your choice. The Sierra 190-grain Matchking, combined with 43 grains of Winchester #760, delivers about 2360 fps. This is slow, and will give a steeper trajectory than the lighter bullet, but the extra weight helps somewhat with wind-bucking. This load is accurate enough to give ½" groups at 100 yards.

Is it necessary to weigh every charge? Definitely not, unless there's something wrong with your powder measure. A good powder measure, such as the Ohaus, will deliver very consistent charges.

It helps to use ball powder because it flows better and more consistently than cylindrical grain powder. Brand is important. Both Winchester and Hodgdon are reputable brands, and you shouldn't take a chance with cheap imports.

CUSTOM BULLET SEATING

If you decide to use handloads operationally, you can deviate from factory specification with regard to seating depth and overall length. The most accurate results usually come when the bullet just touches the

rifling. Factory ammo is shorter than ideal because it must fit a variety of weapons.

The way to find the ideal seating depth for your weapon is to make a dummy load to check it out. Using a trimmed and resized case without primer or powder, seat a bullet part-way. Chamber this dummy round, noting if it takes more than usual force on the bolt handle. Remove the cartridge. The bullet may have been pushed back into the case a slight amount by running into the rifling. It's important to use a trimmed and re-sized case because otherwise the resistance you feel may be due to the case mouth running into the rifling and squeezing the bullet.

Re-chamber the cartridge, again noting if it takes more than usual force to close the bolt. If it doesn't, light a match and pass the bullet through the flame. Chamber the cartridge again and remove it. Inspect the bullet for marks left by the rifling. If the marks show that the bullet is just contacting the rifling, measure the length of the cartridge and record the measurement. This will be your overall length.

One final check is necessary. Insert the dummy cartridge in your rifle magazine to make sure it's not too long to fit. If it fits, that will be your standard. If not, reduce overall length until it does.

LOADING FOR ECONOMY

Reloading fired cases can save well over half the cost of each shell. It's also a good indoctrination for new members of the team, who may take to it enthusiastically if they're firearms hobbyists.

Whatever you do, don't slough this task off on prisoner trustees. They'll either do a sloppy job or a

little purposeful sabotage. Over-loading the case or substituting a pistol powder can damage a good rifle, and perhaps even damage you.

SIGHTS AND SCOPES

It's generally accepted that optical sights are best for the sniper role. Let's look at this belief for a moment and see how valid it truly is. The need for precision is obvious when the task is to "take out" a suspect without injuring the hostage. However, the range is also important. In some cases, the range is the width of a street or even across an alley. At very short ranges, a scope sight is a handicap because of the limited field of view. This is especially so if the scope is a fixed-power instrument of 10X or more.

There are several possible answers. One is to have two rifles, one with iron sights and the other with a scope for longer ranges. This is cumbersome, more expensive, and requires the sniper to keep both weapons sighted in.

There are a couple of brands of "see-through" scope mounts, which allow using the rifle's iron sights. The problem with these is that the scope is elevated higher above the barrel than it would be with the normal low mounts, and this causes a sharper angle on the bullet path. It also leads to a greater sighting error if the shooter cants the rifle even slightly.

Another type of scope mounting system is the Millett "Scope-Site," which has a set of iron sights on the top of the rings. The front ramp has a "Blaze

Orange" insert, which is very visible in the half-light of dawn, and the rear sight may be fixed or adjustable. For the police sniper, the adjustable rear is better. The Scope-Site has a short sight radius, typically less than six inches, but this isn't a serious handicap for the short ranges at which the police marksman will be using it.

The Scope-Site costs about seventy dollars, and is available from:

MILLETT SIGHTS
16131 GOTHARD STREET
HUNTINGTON BEACH, CA 92647
Phone: (714) 842-5575 and -5245

Another answer is to have a fixed-power scope of 2X or 3X, on the assumption that practically all targets will be at short ranges. In some areas, this will work. In others, it's awkward.

There are a couple of advantages to the fixed-power scope, and we ought to get into them so that you will have the information you need to make a sound decision. Fixed-power scopes are less expensive than variables. The price difference isn't great, but for some, it's enough to swing the decision. Fixed-power scopes are also simpler optically and mechanically. This means fewer parts to go wrong. In practice, variables have not shown themselves to be especially troublesome. The military, however, tend to prefer fixed-power scopes, and the new U.S. Army specification for the XM-24 sniper weapon system calls for a fixed-power scope of about 10X or 12X. The high power is useful because military snipers take shots at very long ranges. Fixed-power scopes are also a few ounces lighter than their variable

counterparts. How important is the weight? To someone who has to carry it on his back all day, it can be important, but otherwise it's insignificant.

The solution that most police snipers accept is the variable-power scope, for its versatility. The power range varies with individual needs and preferences. For urban areas the sniper is better off with the lower power ranges, such as 1½-6X or a 2-7X. The ones in most common use are the 3-9X variables, partly because they're so popular in other applications. Police snipers working in more open areas will want to look at the 4-12X variables.

An additional reason for the selection of a variable-power scope is that the police marksman's job involves more than shooting. As we've seen, observing the scene takes up much more time than taking the shot. Sometimes, it's necessary to crank the scope up to full power to get a close look at a detail, and this is only possible with a variable-power scope.

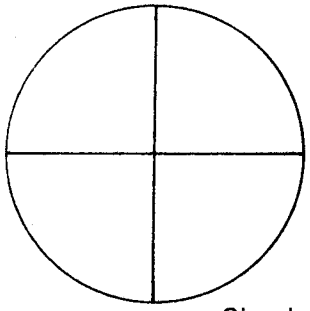
SELECTING A SCOPE SIGHT

Obviously, you should never buy a scope without first looking through it. Check out the reticle to be sure that it's the type you prefer. Also check the eye relief. This is the distance from the rear of the scope at which the image fills out to a clear disc with sharp edges all round. In the higher-power scopes, eye relief may be too short. This can cause a serious problem because the weapon's recoil may push the scope into your eye. If you wear glasses, the danger is increased.

Eye relief should be over three inches for best results. You may be able to tolerate somewhat less than that, but much less is dangerous.

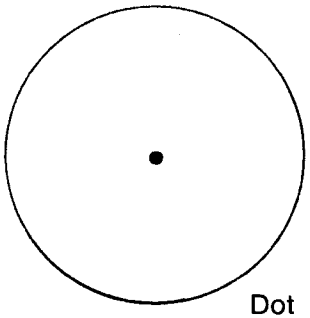
RETICLES

There are many designs of reticles available. Some are simple crosshairs.



Simple Crosshairs

Another type is the central dot:



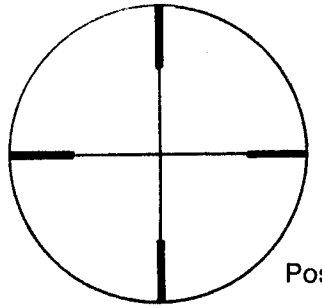
Dot

The dot is usually too large to be useful because it blots out a good portion of the target. Too small a dot

is hard to acquire. The exception is the illuminated dot found in some scopes.

There are also combinations of the two.

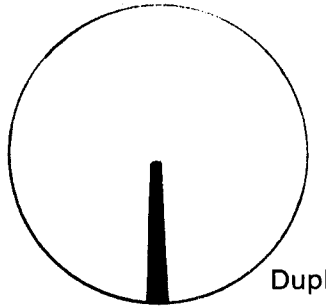
Some reticles have a post:



Post Reticle

Others have a reverse post coming down from the top of the field of view. There are combinations of crosshairs and posts.

The only reticles worth considering are the crosshair types. These come in two kinds. One is the simple crosshair, and the other is the "duplex," which has thick lines at the outside of the field, and thin crosshairs at the center:



Duplex Reticle

The simple crosshair can serve for many purposes. One possible problem is that the wires might be too fine for seeing in dim light.

The duplex reticle is the most versatile and the most desirable. This is because the thick lines are visible in less light than the thin ones, which enable fine sighting in bright light. The duplex also can double as a rangefinder.

ADJUSTMENTS

Any scope selected for police use should have click adjustments for both windage and elevation. This is a common feature today. The adjustments should be in fine increments, no larger than ¼ minute-of-angle. Some top-rank scopes, such as some Balvar Models, have ⅛ M.O.A. clicks.

Some of the larger scopes have oversize adjustment knobs. These are undesirable because they may snag during movement.

Another feature is the front focusing ring. Not all scopes have this. It's desirable because many fixed-focus scopes are focused for 100 or 150 yards, and targets in police sniping incidents tend to be much closer.

If a scope lacks this feature, and you notice that targets closer than 100 yards start to fuzz out, go to a lower power. This reduces the out-of-focus effect.

VARIABLE-POWER SCOPES

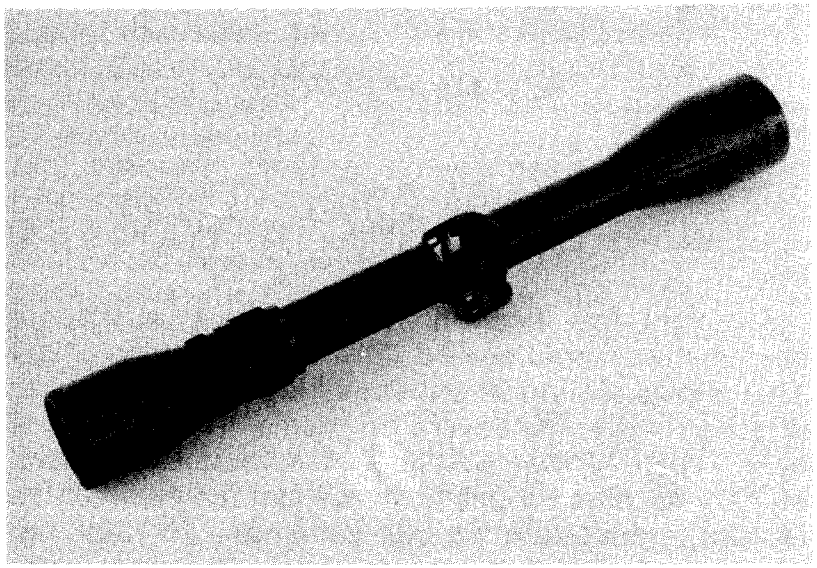
There are many excellent models available. They vary in power ranges and price, as well as small details.

One top-quality variable for long-ranges is the Bausch and Lomb Balvar Target scope in 6-24x. This

has ⅛ minute click adjustments and a 40mm objective lens. It's light for its size and power, but is somewhat bulkier than other scopes of lesser power.

Another is the Bushnell Scopechief. This comes in a number of models, but the most useful are the 3-9x and 4-12x variables. Both have 40mm objective lenses. The 4-12x has a front focusing ring. This makes it especially valuable for shorter ranges. Both of these have duplex reticles and ¼" clicks and are available from:

BUSHNELL OPTICAL CO.
300 N. Lone Hill Ave
San Dimas, CA 91773
Phone: (800) 423-3537
Attn: Dick Anderson



The Weaver V9 is a 3-9x variable with ¼" clicks and a duplex reticle.

It is available from:

WEAVER-OMARK INDUSTRIES
PO Box 39
Onalaska, WI 54650

What's most important is to realize that it's not necessary to lay out the big bucks for a decent scope. Granted, there are special "police models" with non-reflective matte finishes and oversize knobs, but at what price? It's possible to dull the finish of the scope body, but the lens facing the subject can't be dulled. If it's essential, a small can of spray paint will serve to apply a dull finish to the metal. Large, target-scope knobs are cumbersome and awkward. They're not desirable.

LOW-LIGHT SCOPES

There have been several systems proposed and built for low-light sniping. They vary in price and effectiveness. Let's look at the least practical one first, to get it out of the way.

The light amplification scope is a bulky electronic device that amplifies the light about 50,000 times. This allows aiming in extremely low light. This type of scope has some severe problems, though. One is cost. Typically, they cost about five thousand dollars. Military-surplus scopes cost less, but they're likely to be early-generation scopes vulnerable to dazzling. This means that if you inadvertently aim at a street light or even a household light bulb, the scope goes blind and shuts down.

Another problem is weight. They're much bulkier than optical scopes, although not much longer. They are much heavier, with models weighing between three and five pounds.

The most serious problem, though, is lack of resolution. The image appears as a bright green monochrome image, but lacks detail. For example, sighting at a multi-color "Duelatron" target shows only a blank sheet of paper. It's also difficult to recognize anyone through one of these scopes at more than 25 yards. In another instance, a man standing in the shadow of a house across the street was visible to the naked eye, but not through the scope.

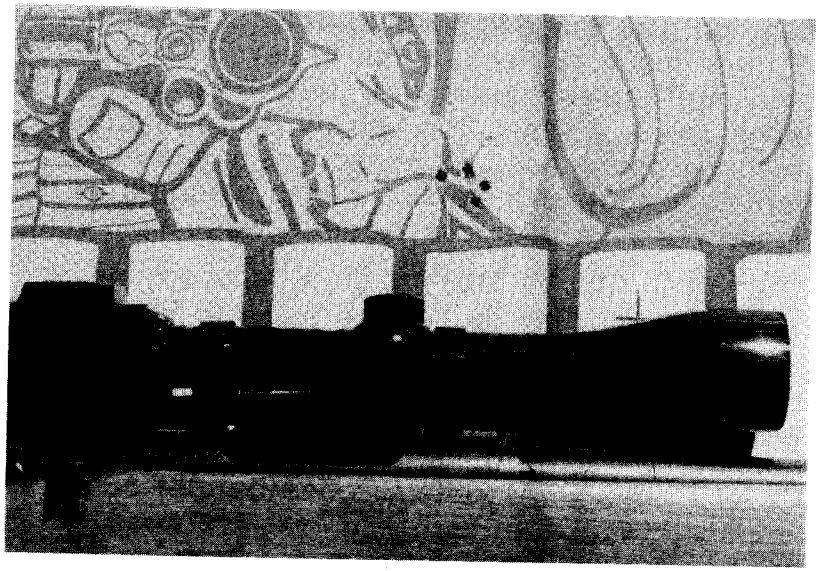
Light-amplifying scopes are suitable for military use, because it's not essential to identify the target. For police use, they have severe limitations and simply aren't worth the money. Agencies which have bought them have found this out the hard way. The Royal Canadian Mounted Police bought 50 light-amplifying scopes in 1975, and hasn't yet used one to fire a shot operationally.

Another solution to the problem of sighting in low light is the illuminated reticle. There are two types of illuminated reticle. One is the LED (light-emitting diode), as in the Bushnell Lite-Site, and the other is the tritium insert, such as the Armson Trijicon "Spectrum."

The Bushnell Lite-Site comes in two models, both variable-power. One is a 1.5-6X, and the other is 3-9X. Two A746 batteries provide power for the LED, which operates with a slide switch that is also the battery compartment cover.

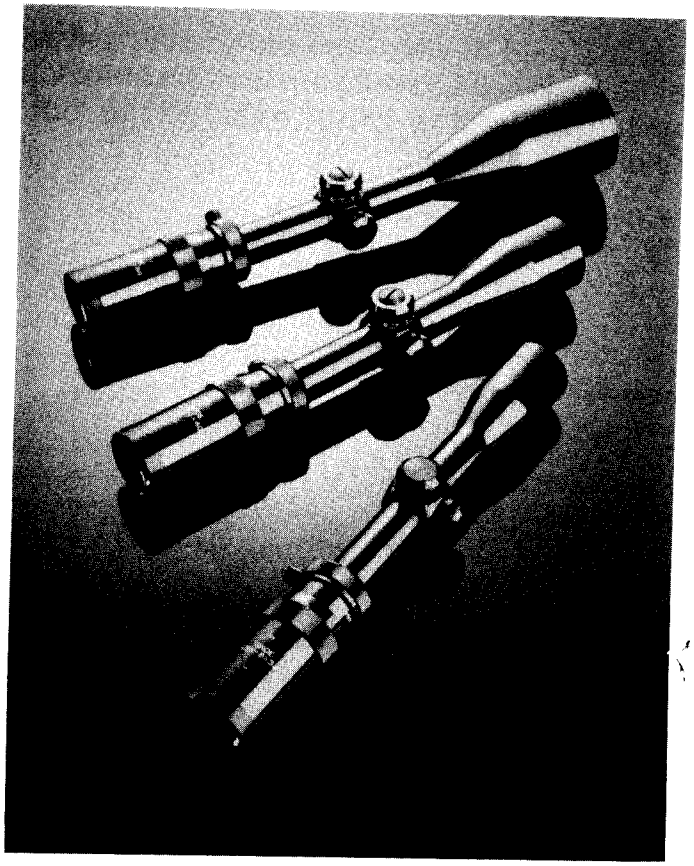
When you look through the Lite-Site, you see a set of duplex cross-hairs, as in conventional scopes.

Pushing the slide switch forward lights the LED. In low light, the cross-hairs tend to blend into the background, and the bright red aiming point helps the sight picture.



Bushnell 3-9X Lite-Site mounted on a Remington Model 788. This makes one-inch groups possible in low light.

The Armson Trijicons come in five models. The first two are the fixed-power 4x40 and 6x56. The other three are variables: 1.5-5x32, 2-7x40, and 3-9x56. All have duplex reticles and all include self-luminous tritium crosshairs. In daylight, the reticles appear black, like conventional crosshairs. In low light, they glow red. This is an unusually good design in that the crosshairs start to glow at the point when the light becomes too dim to easily distinguish them from the background. This allows shooting accu-

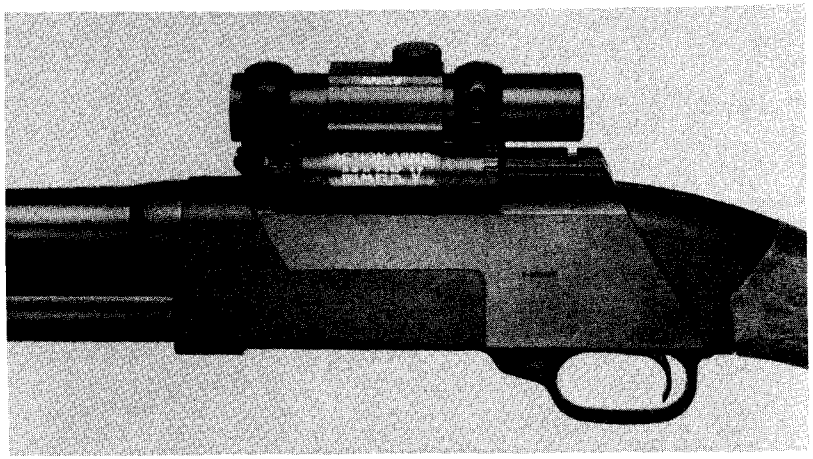


Trijicon Riflescopes are available from:

ARMSON, INC.
PO BOX 2130
FARMINGTON HILLS, MI 48333
Phone: (313) 553-4960
Attn: Mr. Glyn Bindon, Pres.

The Action Arms Mark V Point Sight is a non-magnifying optical sight with an LED presenting a

red dot in the field of view. The differences between this and the Bushnell Lite-Site are that the Mark V has no crosshairs and the brightness of the dot is adjustable.



The Mark V mounted on a shotgun. This will allow accurate placement of rifled slugs from a shotgun, but it's also suitable for rifles.

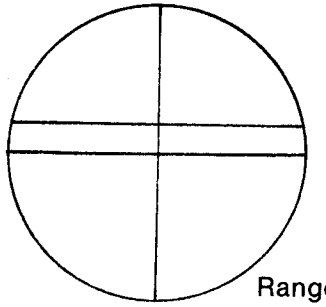
The Mark V works from two mercury batteries which have a theoretical life of 50,000 hours at the rheostat's lowest setting. A rheostat/on/off switch adjusts the brightness and allows the user to shut the unit down when not in use. Depending on the weapon and the shooter, it's possible to attain groups as small as two inches at 100 yards. The Mark V is also rugged, being very resistant to damage from mechanical shock. The rheostat adjustment allows a brightness range enough for broad daylight down to very low light. Adjusting the dot's brightness also adjusts its apparent size because when the power is higher, the dot "blooms" and seems to expand. This lets the user adjust it for all light conditions and target brightnesses.

The Mark V is imported by:

ACTION ARMS
PO BOX 19630
PHILADELPHIA, PA 19124
Phone: (215) 744-1200
Attn: Chayim Stern, Gen. Mgr.

RANGEFINDER SCOPES

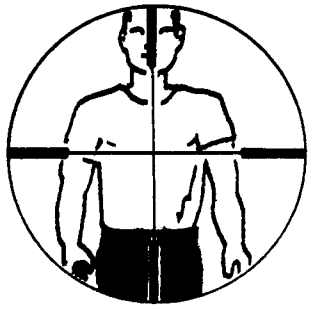
Some scope models have rangefinding reticles. These have scales corresponding to the average height of an adult male, and when the two wires exactly subtend a standing target, the range reads off from a scale. Others have stadia wires subtending 18", or the average distance from the chi to the waist. One scope and mount combination, the Leatherwood Automatic Ranging Telescope, has a cam ring that automatically elevates the scope to correspond with the range. These features add to the cost of the scope.



Rangefinder Reticle

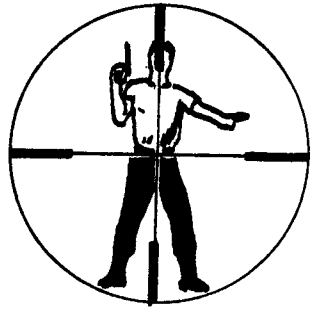
The two horizontal stadia lines subtend a known amount at various ranges on the scale.

The simplest way to obtain a rangefinder effect is to have a variable-power scope with a duplex crosshair and to calibrate it for different ranges. You can do this easily by cutting a piece of cardboard to 18" length, and noting what power settings correspond to various ranges. If, for example, the tips of the duplexes just touch the ends of the cardboard at 5.5 power at 100 yards, you know that your reticle will cover 18" at that range and setting. This allows you to make up a chart for various ranges. In the field, if you place one duplex tip on a man's chin, and the other at his waistline, and the power setting reads 5.5, you know that the range is about 100 yards.



You don't have to worry about getting the range down to the last yard, as studying a ballistic table will show you that the variation in bullet drop is very small over a few yards.

If the target is out of range, appearing to be smaller than the distance between the coarse posts, you can extend the range by using the distance between one post and the crosshair:



This is half the interval, and you simply double the range on the card.

SCOPE MOUNTS

The simplest are the best. There are some types of mounts with quick-detach features, but the police marksman won't use this at all, because removing the scope always upsets the zero. Some manufacturers claim that their mounts are so precise that the shooter can remove the scope for packing and replace it without losing accuracy, but this is only for big-game hunters. A shift in impact point of an inch or two won't be critical when hunting elk or bear. It is important for the police sniper.

The split ring mounts seem to be the simplest and most workable. Even within this class, there are some variants. Some, as we've seen, are made with a set of iron sights on top of the rings. This is for close-range shooting.

Another option is the windage-adjustable rear ring. Some prefer this device because it allows them to use the base for windage adjustment and the scope's internal adjustment for elevation. Because of a scope's three-point mounting system for the reticle, an adjustment of the windage will also affect the elevation slightly, and vice-versa. Some shooters find this annoying.

One-piece or two-piece mount? Sometimes there's no choice, because of the design of the rifle or the availability of mounts for it. It doesn't seem to matter much, despite the claims of various manufacturers. What's really important is the way the mounts are attached to the rifle. It's unwise to slap them on, and expensive to have a gunsmith do it. A few rifles are not drilled and tapped for scope mounts, in which case a gunsmith's services are essential.

Some sources for scope mounts are:

BUEHLER SCOPE MOUNTS
17 ORINDA HIGHWAY
ORINDA, CA 94563
Phone: (415) 254-3201
Attn: Robert Ray

CONETROL SCOPE MOUNTS
HWY 123 SOUTH
SEGUIN, TX 78155

Mounts are also available from some scope manufacturers.

In principle, mounting the scope is simple and straightforward, but it requires slow and careful work. The first step is to degrease all screws and screw holes thoroughly with acetone or any other solvent

which doesn't leave a residue. A cotton swab works well on the screw holes. Apply a drop of thread locking compound in each hole before inserting the screw. Use a gunsmith screwdriver to get a good fit in the screw slot and to avoid marring the screw. If the mount uses hex bolts, it's important to match the size of the key to the bolt. Please note that some may be metric sizes, and that American sizes may be close fits. They're not exact, though, and you risk stripping the bolt slot.

Getting the vertical crosshair exactly upright can be a problem for some people, especially those who have astigmatism. It's essential to square up the reticle because otherwise there will be no end of trouble in sighting the rifle for zero.

The best scope rings for quick and accurate setting up are the split type. These are divided into top and bottom rings, and the top rings are attached with a couple of hex bolts. The one-piece rings are an awful pain in the neck, because tightening the screws also rotates the scope in the rings, making precise adjustment time-consuming.

A quick boresighting can establish if the reticle is upright and if the cross-hairs are approximately on target. The way to do this is to place the rifle in a cradle or on a solid support, and remove the bolt. Sight on a distant point through the barrel and through the scope. Don't worry if they're a couple of inches off. The bullet impact's not likely to be exactly at that point, anyway, and only test-firing will establish the weapon's zero.

Another task is setting the scope's parallax adjustment. The ocular lens is adjustable for this. Twisting the mount while holding the locking ring will loosen it. Point the scope at the sky or a blank wall and look

through it. Are the crosshairs sharp? If not, adjust the lens mount. Look away at a distant object, then back through the scope. Are they sharp? It's important to note if the crosshairs are sharp the first moment you look at them, because your eye will adjust its focus after a fraction of a second. Be finicky on this point, and don't be satisfied until the scope is adjusted exactly the way you need it. Any error will result in a sighting error.

LENS CAPS

Some scopes come with caps. The Bushnell Lite-Site comes with a set of caps attached by elastic bands. Some come without. In any event, you may not like the caps that come with your scope. There is a set of accessory scope caps available. These are the flip-up type, and are available from:

BUTLER CREEK CORP.
290 ARDEN DRIVE
BOX 1320
BELGRADE, MT 59714-1320
Phone: (800) 423-8327
Attn: Bill Heckerman, Pres.

TESTING: CHECKING OUT YOUR SCOPE SIGHT

It often happens that a rifle is unfairly maligned for lack of accuracy when the real problem is with the optical system. Quite often, a simple corrective measure, such as tightening the scope mount screws or changing scopes altogether, will make a significant difference in accuracy.

Before placing any scope into service, it's important to check it out thoroughly because subtle problems can affect the sight picture and the accuracy you get out of your weapon system. No optical system is perfect, and the question that concerns you is whether you can live with the imperfections in your system.

You can conduct the preliminary testing without firing a shot. In fact, it's preferable that you do, to avoid introducing errors from other sources into the system. If you were to "test-fire" your system, you'd have to cope with errors from the rifle and ammunition, and possibly wind.

Start by adjusting the scope's parallax to your eye, as described in a previous chapter. You need to make sure that the scope's image and the reticle are exactly congruent, or you'll introduce sighting errors.

Check the focus of your scope. Do this by observing the target at different ranges under one hundred yards, and note where it starts to appear blurry. If you

have a front focus ring, adjust this to note if it corrects the focus adequately, and note what the bottom limit is. You'll find with any scope that there's a minimum range below which you can't adjust to make the image sharp.

If your scope does not have a front focus ring, but is a variable-power, you'll find that backing off on the power increases apparent sharpness. Reducing the power increases the depth of focus. This is a technique you can use to cope with targets at short ranges. When they're close, you don't need much magnification, anyway.

Next, mount the scope in a set of rings attached to a metal bar, which you then clamp to a solid bench or table. Aim the scope at a target fifty or one hundred yards away. The target should be one with a grid pattern printed, such as the Speedwell rifle sighting target. This will make measuring the amount of error easier. Adjust the scope's position and the crosshairs so that the target is perfectly centered. If you have a variable-power scope, do this with the scope at its highest setting.

Back off from the highest power setting and note if the crosshairs seem to shift as you change power. If they do, you must know what the error is. Almost any scope will shift, but the amount in a good scope should be less than ¼" at 100 yards. If the shift is more than this, you'll still be able to live with it if you decide that you'll do your shooting only at one power setting. This is often procedure with snipers, because most find that they feel most comfortable firing at one power setting.

If there's a front focusing ring, play with this to see if changing the setting changes the position of the crosshairs. You won't be able to go very far doing

this, because as you throw the scope out of focus you'll find it harder to see the target, but you can get a rough idea.

Now you're ready to check your mechanical adjustments. Move the elevation adjustment up twenty clicks, and back down. Count very carefully, and note if the crosshairs are again centered upon the target. Now adjust the elevation down twenty clicks and back up. Do the crosshairs once more center upon the target? Move the windage in one direction and back to center. Repeat in the other direction.

This completes the immediate testing. If the scope fails, it suggests that there's something loose inside or that the overall quality is not up to what you need.

Mount the scope on the weapon, and begin zeroing the rifle. This will give you the opportunity you need to check how well the scope stands up to recoil and normal handling. This is very important, because if something's going to come loose, it will most likely happen during the first few boxes of ammunition fired through the weapon. This leads to another very important point:

Never place a rifle into service until you've fired at least one hundred rounds through it, with the same scope. You need to familiarize yourself with the weapon, and to check out how the system works together. After your first firing session, which should be about forty rounds, check all the screws and bolts for tightness, and clean the weapon. At the next session, twenty rounds, note how the system has held its zero. Another couple of firing sessions will tell you how the system holds together. It will disclose other possible problems, such as stock warpage, which can affect the accuracy.

Stock warpage? How can that happen? Doesn't everyone use synthetic stocks nowadays? At least, aren't all stocks properly relieved and "bedded." No. Not everyone does. It's not always necessary. Going through the procedures whole-hog creates lots of work for the gunsmiths, but also wastes time and money. Synthetic stocks aren't always necessary, either. All depends on what accuracy you need.

The hundred-round practice firing will let you test the entire system, now that you've determined that the scope checks out. This should be standard practice after every major change in the weapon. If you obtain a new scope, check the whole system out again. If you put on a new barrel or stock, check the system out. If you remove the scope from its rings, for any reason, check the system out with at least one box of ammunition.

The final aspect of testing to discuss is documentation. Log the tests, and save the records. Today, it's wise not only to be able to document that the sniper is "qualified," but that the hardware has been checked out and passed the test.

AUXILIARY EQUIPMENT

There are odds and ends of gear a police sniper needs. Some are very expensive. Others are cheap.

CARRYING CASES

The typical sniper's rifle spends most of its life in a vehicle of some sort. In departments large enough to have a SWAT van or truck, there may be a rifle rack in the truck. This is poor practice because everything then depends on that truck. If it breaks down, or if two incidents occur at the same time, getting the weapons to the snipers will be a hassle.

More likely, the sniper will carry his rifle in the trunk of his car, crammed in with a vest, shotgun, gas mask, jump-suit, and assorted other gear. Because of the extreme precision needed from a sniper's rifle, and the high risk of mechanical damage, a top-rate case is absolutely necessary.

There are soft cases and hard-shell cases available. Both use foam plastic to provide cushioning against shock. The hard case is more bulky, and gives somewhat better protection. Some hard cases give tremendous protection, but are two or three times as heavy as the rifle. They'll protect the weapon if thrown off a cliff, but are too bulky to fit in a car trunk.

The soft case is lighter, and usually has pockets for extra magazines, boxes of ammunition, a tripod, and other accessories. The main advantage of a soft case is that it's convenient to carry. This can be very important when the sniper has to climb to gain his position. Having the rifle slung by its strap over one shoulder exposes it to damage from striking against objects. A good quality soft case offers good protection when negotiating obstacles. The best soft cases have carrying handles and shoulder straps for versatility.

LOAD BEARING EQUIPMENT

It's become common practice for SWAT team members to wear load-bearing vests. There are all types and configurations available. Some are fairly worthwhile, and others are heavy and impractical horrors sold at outrageous prices.

The purpose of a vest is to carry equipment. The big question is: "How much equipment do you need to carry?" There are specialty vests for various team members. Some are "gas man" vests, with pouches for Ferret rounds and assorted gas grenades. Vests also come with long magazine pouches to hold submachine gun magazines. Yet others have repelling harnesses built-in. Yet others are combined load-bearing and body armor vests.

One simple and practical test to check out a vest is to load the pouches with the gear you'd normally carry, including the handgun if the vest has a holster. Reach across and try to draw the handgun. Some vests, when loaded, don't allow drawing or even reaching the weapon. Repeat this with the gear in each pocket. You need to verify that everything

you're carrying is easily accessible, and not just useless ballast.

When deciding on a vest type, or even whether the sniper needs a vest, you have to consider several important factors:

1. What equipment do you really need to carry? A sniper doesn't need extra pouches for gas grenades, and other gear. He also doesn't need many magazine pouches. The sniper should be able to do the job with one shot. Allowing for misses and other unpredictable factors, one box of ammunition is the maximum worth carrying.
2. Extra gear adds weight and bulk. The sniper may need to squeeze through a small space, or keep a low profile to avoid observation. Extra pouches can snag on objects and impede movement.
3. A combined armored and load-bearing vest allows the sniper no choices. He can't lay the load-bearing vest to the side when he's in position without removing the armor, which he may need in some situations.

The sniper, as well as certain other team members, will probably be able to get by with a lighter and less costly load-carrying arrangement. A "fanny pack" is a good choice, especially because the belt can hold his sidearm and an extra magazine pouch.

A harness also offers advantages. It can hold a radio, knife, and other gear on the risers, and a canteen, handgun, and magazine pouches on the belt.

A hand case can also serve the purpose. This offers the advantage of being very quick and easy to put down if necessary. The disadvantage is that it takes

up one hand, and this can impede climbing. Some, such as the one made by Assault Systems, come with shoulder straps.

These smaller and lighter carrying cases are always easier on the budget than load-bearing vests. In small departments, expensive items on a "wish list" stand little chance of being procured.

BODY ARMOR

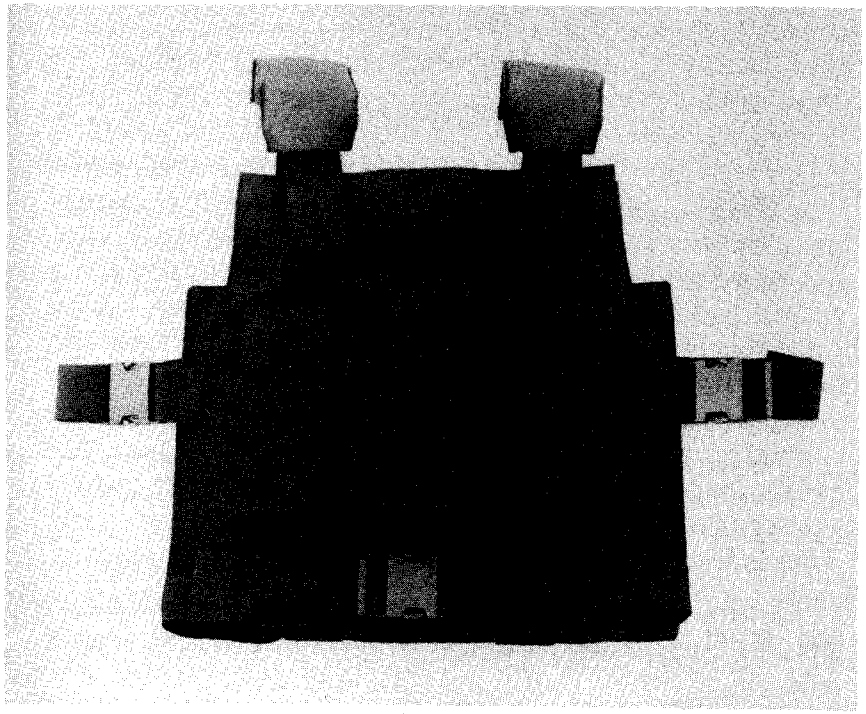
The need for body armor varies with the function. The entry team definitely needs armor. This will be a "tactical vest" that protects against submachine gun and even rifle fire. Officers working the perimeters are not in such immediate danger, but it's still good practice to equip them with tactical vests. The outer perimeter officers usually don't come under fire. They may wear their "everyday" soft body armor, but don't need tactical vests. The sniper usually does not need armor, either. Here's why:

The sniper works from cover and concealment. He's also likely to be farther from the suspect than other team members. His functions require him to stay put, observe, report, and perhaps to fire one or two shots. He does not take part in "rushing" the premises. This means that he's less likely to be exposed to gunfire.

Because the sniper must maintain alertness over long periods, anything that increases fatigue works against him. In a hot climate, a vest not only is uncomfortable, but can bring on heat exhaustion.

The bulk of the armor can interfere with shouldering the rifle. In one incident, the sniper missed with his first shot because he'd trained without his vest and firing with the vest on spoiled his aim.

This is why it's a mistake to assume that the sniper needs body armor in every situation. The sniper definitely should be equipped with body armor, but he won't often need to wear it. A good compromise is for him to wear his armor while moving to his designated vantage point and to doff it when he gets there. He'll thereby have protection while on the move, and can use the armor as a rest for his rifle once he assumes his position.



One practical type of tactical vest is the "Beta Vest," made by Silent Partner. This is relatively light, has a few pockets for extra magazines and other gear, and is quick to put on and take off because of

the Fastex fasteners. There's not much bulk at the shoulders, which makes shouldering a weapon less awkward than with a heavier vest. This vest is made by:

SILENT PARTNER
612-18 THIRD STREET
GRETNA, LA 70053
Phone: (800) 321-5741
Attn: Diane Zufle

SHOOTING MAT

A SWAT sniper keeping a subject under observation or waiting for a "green light" can feel very cramped and uncomfortable after staying in the same prone position for hours. This is very true in urban operations, when instead of soft grass or hay the sniper has only hard concrete. A shooting mat is valuable, and it's possible to improvise this from a piece of scrap carpet, for the budget-conscious officer. However, there's an unusually good commercial product available, and this is worth a close look. This is the Wildrest® foam pad.

This is a 6-foot by 20-inch long slab of medium density "eggcrate" foam in a synthetic fabric envelope. "Eggcrate" foam is especially suitable for this application because it insulates against cold ground and hot asphalt.

This mat weighs two pounds, and rolls up into a twenty-inch long roll. Spare eggcrate pads cost under ten dollars. The covers come in gray, blue, and other dark colors. Price is $58.50. This is made by:

THE WILDERNESS
5130 North 19th Avenue
Suites 11 and 12
Phoenix, AZ 85015
Phone: (602) 242-4945
Attn: Ralph Holzhaus

CLEANING SUPPLIES

Any sniper knows that a clean rifle helps accuracy, but there are many bore cleaners out, not all of which do the job. Some are too expensive. Others simply don't work the way the ads claim they do. One bore cleaner which is effective and not over-priced is "Shooter's Choice." This is made by:

VENCO INDUSTRIES, INC.
16770 Hilltop Park Place
Chagrin Falls, OH 44022
Phone: (216) 543-8808
Attn: Joseph Ventimiglia

A cleaning rod and accessories are important, but even here it's possible to save money. Commercial patches are over-priced. It's much, much cheaper to cut up your own from old clothes. Not all fabrics are suitable for this, though. Many synthetics aren't absorbent enough. Pure cotton is best. At least, the material should be 65/35 cotton polyester. You can cut up patches with scissors while watching TV.

Don't make the mistake of getting a stainless steel bore brush. They're not supposed to scratch the bore, but how do you know? The manufacturer's quality control may have slipped a little, and the stainless steel wires may be harder than specified.

Play it safe and stick to brass brushes, even though they don't last as long. Replacing a brush is a hell of a lot cheaper than replacing a barrel.

OTHER EQUIPMENT

A radio is necessary, and the choice will be between the standard issue "portable" or one of a number of "hands free" models. Commercially-available short-range FM models aren't expensive, costing about fifty dollars apiece.

A gas mask may be part of the issue equipment, but in normal circumstances the sniper won't need it.

Can you shoot with the gas mask on? Watch this point when selecting gas masks. The M17 has the filters in the cheek-pieces. The Pirelli SEKUR has the exhaust valves in the cheeks. This can impede the contact with the stock.

The Draeger M65 allows full contact of cheek with stock. So does the Israeli civilian gas mask, sold at surplus by a few outlets. Both of these have the filter in front, out of the way. The exhaust valves are right above the filter mounts.

Will you need a canteen? In what area of the country are you? In some locales, exposure under a hot sun during a callout can raise a terrible thirst. Tactical conditions may not allow you to move from your position for many hours, and you may not be relieved until the operation's over.

A jumpsuit is handy if you're not normally in uniform. Slipping it on over street clothes gives a quick change, and lets you crawl without sacrificing your clothing. The best aspect of a jumpsuit is that

you can roll it up for storage. In this job, wrinkles don't matter.

When buying jumpsuits, often cheapest is best. There are some very high-priced "SWAT" suits available, but they're really not necessary. For the occasional use they get, you don't need jumpsuits that break your budget. Camouflage clothing is another story, and we've covered that in the section dealing with cover and concealment.

OPTICS

Do you need binoculars or a spotting scope? Many instructors recommend these, but realistically they cost money and are additional items to carry. Let's look at what they can do for you, though, because you'll have to decide if they're worth the trouble.

Binoculars are for the second man in the sniper team. If he doesn't have his own rifle, with its scope, he can use binoculars to provide a second pair of eyes for observation. If he's taking over from you so that you can rest your eyes, he can use your rifle and scope.

What sort of binoculars? Compacts take up little room in a crowded gear bag, are light, and usually less expensive than full-size binoculars.

For distant subjects, more power helps. A spotting scope, with 20X or 30X, can be more useful. Of course, the more powerful instruments have narrower fields of view. The increased power requires using a tripod or a bean bag for stability.

To save money and weight, many police marksmen compromise and put variable-power scopes on their

rifles. The "zoom" feature allows adjusting for desired power and field of view, and is very practical.

THE BUDGET

Whether you're a sniper, SWAT team commander, or high-level police administrator, you have to fight the battle of the budget constantly. This is why you must be aware that much police-oriented gear is over-priced and impractical. Think carefully before you commit your dollars, and shop for the best buys. This doesn't only mean the lowest price, but the most useful articles.

Before buying anything, ask yourself if it's really necessary. It's easy to load up with gear, but space is limited, and there are some essentials which a sniper must have with him at all times. Only so much will fit in the trunk of a car, and space is even more limited if two team members share a take-home car.

When selecting gear for a SWAT team, you have a choice among a tremendous variety of items, made by both old-line manufacturers and newcomers. Look over everything carefully, because you'll find that some traditional police suppliers are simply trading on their names and reputations, and that some newcomers offer excellent gear at a lower price.

-APPENDIX I-

BALLISTICS:

A QUICK PRIMER

You don't have to be a ballistic engineer to be an effective sniper. A basic knowledge of the major points is enough. In this chapter, we'll stick to the basics, and try to cover them in non-technical language, because a simple discussion is usually all that's necessary.

VELOCITY

Let's start with velocity, because this is the figure most commonly used when discussing a cartridge or caliber. Velocity is the speed of the bullet. The bullet travels fastest when coming out of the muzzle, but air resistance, also called "drag," starts slowing it down immediately.

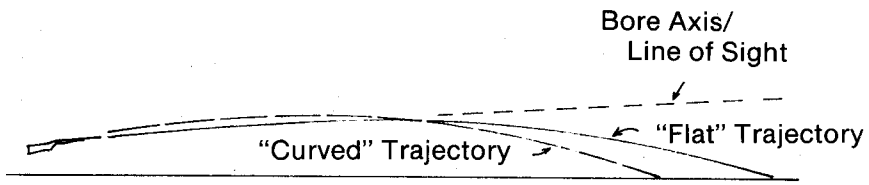
Some practical points regarding velocity are that lighter bullets tend to come out of the muzzle faster, but because they have lower "ballistic coefficients," retain their speed less well. They slow down faster, and have less range. Heavier bullets hold their speed better, and also resist wind deflection better, because they have more mass. We'll look closely at why this is so next.

BALLISTIC COEFFICIENT

The "ballistic coefficient" is a number which tells us how efficiently a bullet passes through the air. The ballistic coefficient can range from about .100 for some pistol bullets to over .700 for a couple of rifle bullets that are very efficient. The higher the number, the more the bullet overcomes "drag," the force that slows it down.

TRAJECTORY

A bullet never travels in a perfectly straight line. It starts falling from the moment it leaves the barrel. Gravity acts upon a bullet moving at supersonic speed just as it would if it were standing still. Because of this, the bullet's flight is always a downward curve.



"Flatness" of trajectory is relative. There's always a downward curve, becoming sharper at the end of the bullet's flight. This is because the bullet slows down from drag, but the pull of gravity remains constant.

This is why it's necessary to adjust the sights, optical or "iron," for range. Adjusting the sight for longer range requires depressing the point of aim so

Shooters speak of cartridges that have "flat" trajectories, implying that others have curved trajectories. As we already noted, all trajectories are curved, but some are curved more than others. A fast bullet with a high ballistic coefficient will retain its velocity over a longer range than one which travels slowly and has a poor ballistic coefficient. The second bullet takes longer to travel a given distance, and this means that gravity acts upon it for a longer time before it gets to its destination. The bullet's path will therefore curve more. Let's see how this works.

Much of the following information originated with Sierra Bullets, the company which manufactures the bullets of that name and which publishes the Sierra Manual.[1] Sierra has kindly permitted reproduction of the ballistic information herein.

The ballistic coefficient varies with the speed of the bullet. This is because air behaves differently with different velocities of a projectile. To be scientifically accurate, it's necessary to consider the changes in ballistic coefficients at all speeds, but for our purposes, it's enough to count only the one that applies at the higher velocities.

Let's look at the ballistic coefficients for a couple of common bullets often used in rifles. The .224 diameter hollow-point boat-tail bullet for the .223 Remington cartridge has a ballistic coefficient of .195 at velocities of 2800 fps or more. The .308 168 grain HPBT Match starts out at a lower speed, but the Sierra Manual lists its ballistic coefficient at .475.

Let's hypothetically fire the .224 bullet at 3300 fps to see how it slows down with increasing range. At 100 yards it's down to 2796 fps, a loss of 15.3% in velocity. At 200 yards it's velocity is 2350 fps, a loss

of 28.8%. At 300 yards the remaining velocity is 1948 fps, which represents a loss of 41% of the original velocity.

Now we'll fire the .308 bullet at 2600 fps, which gives us a 100 yard velocity of 2417 fps, a loss of 7.1%. The 200 yard velocity is 2241 fps, a loss of 13.8%. Remaining velocity at 300 yards is 2073 fps, which means a loss of 20.3% off the original velocity.

We see that the larger, heavier bullet holds on to its velocity better. Although it started out 800 fps more slowly than the smaller bullet, at 300 yards it's actually traveling faster. Now let's see how it does regarding trajectory. Again consulting the Sierra Manual, we find that at 100 yards, the .224 bullet has dropped 1.77 inches below the line along which it was fired. The heavier .308 bullet has dropped 2.55 inches. So far, the lighter, faster, bullet has the "flatter" trajectory. At 200 yards, we find that the lighter bullet has dropped 8.04 inches, while the big .308 bullet is down even more, by 11.05 inches. The lighter and faster bullet is still shooting a "flatter" trajectory. At 300 yards the light .224 bullet has dropped 20.67 inches. At the same range, the .308 bullet has dropped 26.46 inches. It's not until we get out to 600 yards that the picture changes. At that range, the lighter bullet, still going 1103 fps, has dropped 134.64 inches. The heavier .308 bullet, going 1607 fps, has dropped only 127.2 inches.

POINT-BLANK RANGE

The term "point-blank range" has a lot to do with trajectory, and even more to do with the shooter's needs. Theoretically, "point-blank range" is the range within which it's unnecessary to adjust the sight to

get a hit. Actually, it's necessary to raise the sights somewhat to hit at any distance, because the rifle barrel and the line of sight are not at the same level. Raising the muzzle to zero the weapon at a distance results in the bullet's striking above the line of sight at closer ranges. Beyond the zero range, the bullet will drop below the line of sight. Actually, this can vary a lot. The shooter who wants to hit a target 5 inches in diameter will find that he can hit it with the 168 grain .308 Matchking out to 200 yards. He starts by "zeroing" his rifle at 200 yards. According to the Sierra Manual, the bullet will be about 2¼" high at 100 yards, and right on at 200. Slightly beyond 200 yards it will drop below the limit, and be more than nine inches low at 300 yards.

The .223 shoots a trajectory that is flatter, and using a 200 yard zero has the bullet going only 1½" high at 100 yards. Beyond 200 yards, it drops, going in almost eight inches low at 300 yards.

What about the effect of wind? A 10 mph wind pushes the .223 bullet 1.39 inches off course at 100 yards, 6 inches at 200 yards, and almost 15 inches at 300. The .308 bullet is more resistant. At 100 yards, a 10 mph wind deflects it only ¾". The deflection is slightly over 3 inches at 200 yards and 7 1/3 inches at 300 yards. From this, we see that a crosswind pushes the lighter bullet off twice as far as it does the .308 bullet. A more extreme case is that of a 30 mph crosswind on the lighter bullet. This will deflect it slightly over 44 inches at 300 yards. The effect of wind, like that of gravity, is always more severe at longer ranges. This is because the bullet's moving more slowly, and the wind has more time to work on it.

Keep these figures in mind when considering what caliber you need to hit what targets consistently at

what range. If you're going for a torso hit, you'll have little or no problem out to at least 300 yards unless there's a strong cross-wind. A brain shot, on the other hand, demands better precision, and you'll have to get in close or adjust for exact range.

OTHER BALLISTIC EFFECTS

Other factors affect the flight of the bullet. A head wind will slow the bullet slightly, increasing the trajectory's curve. A tail wind assists the bullet's flight, and flattens the trajectory. Firing up-hill or down-hill decreases the influence of gravity, resulting in higher impact points. At normal police sniper ranges, the effects you'll see will be minimal. This is why you can ignore these factors totally at under 100 yards. At longer ranges, you'll need to be aware of their influence, but in practice you'll probably find that they have less effect than sighting error.

BULLET SPIN

The helical grooves inside the barrel are called "rifling," and the rifling gives the bullet its spin. The bullet spin, often as high as several hundred thousand RPM, gives the bullet gyroscopic stability, and more accuracy than if it did not spin.

The ideal spin varies with the caliber and the bullet, as well as the velocity at which it's fired. Manufacturers follow somewhat different practices, and you'll find that not all rifles in the same caliber impart the same spin to the bullet.

BULLET SHAPE

The bullet's shape has an effect on accuracy and range. Pointed bullets, often called "spire-points" or "ogival points," are best for the supersonic speeds at which rifle bullets travel. The only reason for a blunt-nosed bullet in a rifle is to avoid setting off the primer ahead in a tubular magazine of the sort found in lever-action carbines. These are rare in police work, and we can ignore them.

A bullet's shape affects how easily it slips through the air. This includes the shape of the tail. Some bullets are flat at the rear. Other have "boat-tails," which are tapers to allow the air to flow in again behind the bullet. This reduces "cavitation" and drag.

The effect of a boat-tail is noticeable mostly at extreme ranges. For the close-in work usually undertaken by police marksmen, it's very unimportant. However, bullet manufacturers put their best efforts into the boat-tail bullets, simply because these are what competition shooters prefer. You'll probably find that the most accurate bullets are boat-tail bullets, often sold under a trade name such as Sierra's "Matchking."

NOTES

1. SIERRA BULLETS
   10532 South Painter Avenue
   Santa Fe Springs, CA 90670
   Phone: (800) 223-8799
   Attn: Bob Ellison

- APPENDIX II -
GLOSSARY

This glossary contains only terms immediately relevant to sniping, not basic terms relating to rifle shooting. The assumption is that the reader is already familiar with basic marksmanship and weapons terminology.

Azimuth - A term roughly interchangeable with "Windage" when adjusting a weapon sight.

Ballistic Coefficient - A figure used to measure how easily a bullet slips through the air. Most bullets have ballistic coefficients between .100 and .700.

Bench Rest - A fixed support for a rifle. This term is also used to describe a type of rifle competition in which shooters use a support for their weapons. Bench rest rifles and ammunition for them are often extremely precise and give great accuracy.

Bipod - A two-legged rifle support usually fixed on the front of the weapon. The legs are usually collapsible and extensible.

Boat-Tail Bullet - A bullet with a base tapering to reduce drag. Drag partly comes from the effects of "cavitation," and the progressive reduction of the diameter towards the rear allows air to fill in the void.

Boat Tail Bullet

Bullet Drop - The amount of fall of a bullet in flight resulting from gravity.

Bullet Drop Compensator - An extra vertical adjustment cam in a scope sight to compensate for varying ranges.

Clicks - Increments of adjustment in both iron sights and optical sights. The amount of movement varies with the sight and the range. In most telescopic sights, one "click" will produce a fraction of an inch adjustment at 100 yards. Higher-quality and higher-power scopes have finer clicks.

Cold Barrel - A barrel on a weapon that hasn't been fired recently enough for the barrel to be still warm. Police snipers are not allowed "warm-up" shots, and must fire from a cold barrel.

Concealment - Protection from view. This is not necessarily the same as "cover." Cover provides concealment, but concealment does not always provide cover.

Cover - Protection from hostile gunfire. "Cover" is a relative term. Cover that's thick enough to shield from pistol bullets may not be adequate for protection against rifle bullets. This is a crucial fact to keep in mind when selecting cover.

Cross Hairs - The fine lines visible inside a scope, which show the bullet impact where they intersect.

Crown - The technique used to finish the barrel's muzzle. The "crown" can be slightly relieved, or recessed. The purpose is to shield the forward edge of the rifling from damage which can spoil accuracy.

Deflection - Two meanings:

1. The amount of lateral deviation resulting from a cross-wind.
2. The amount of "lead" required to hit a moving target.

Drag - The aerodynamic resistance to a bullet's flight.

Drift - Lateral movement of the bullet in flight resulting from rotation or a cross-wind.

Duplex Reticle - Crosshairs coarse at the outside of the field, narrowing to fine lines in the center.

Elevation - Vertical adjustment, compensating for bullet drop and range.

Exterior Ballistics - Calculations relating to factors affecting the bullet's flight.

Eye Relief - The distance from the ocular lens to the shooter's eye.

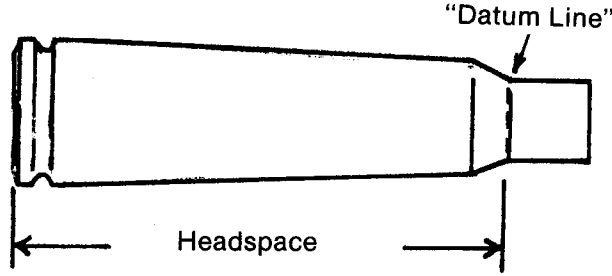
Floating Barrel - A barrel with no contact points with the forestock.

Forestock - The front part of a rifle stock. This may be in contact with the barrel, or may be relieved to eliminate all contact.

Green Light - The sniper's authorization to open fire. Although this is permission, the moment the sniper fires is usually up to him because the target's not always in view or the moment is not ripe at the instant the commander gives the order.

Group - The shots fired at a paper target, with the same point of aim, for checking accuracy. For standardization, it's best to fire five-shot groups with the same aiming point. It's a statistical fact that group size will increase with the number of shots fired.

Headspace - In rifles, the distance between the measuring point on a cartridge case and the bolt face. With bottle-necked cases, the measuring point is on the shoulder, and is known as the "datum point." With belted magnum cases, the headspace is measured between the bolt face and the front of the belt.



High Ground - A term borrowed from the military to denote a high vantage point for observation or opening fire.

Hold-Off - Aiming offset to compensate for wind or target movement.

Hold-Over - The amount of elevation of the aiming point required to get a hit when firing at targets beyond the range at which the scope is set.

Hold-under - The amount of depression of the aiming point to compensate for targets closer than the scope's zero.

Interior Ballistics - Calculations used to measure pressure forces inside the cartridge and barrel during firing.

Kentucky Windage - An estimate of the aiming offset required to compensate for wind effect or target motion. Synonymous with "hold-off."

Lead - The distance in front to aim to have the bullet strike a moving target. This depends on the range and the speed of the target. Also called "Hold Off."

Loop-Hole - Firing port.

Mid-Range Trajectory - The high point in the bullet's flight. This occurs, technically, slightly beyond the half-way mark of the distance at which the rifle is zeroed.

M.O.A. - Abbreviation for "Minute of Angle," which is one-sixtieth of a degree. Used for measurement of sight adjustments and less often for group sizes. Equal to approximately one inch at one hundred yards.

Objective Lens - The lens at the front of the scope.

Ocular Lens - The lens nearest the shooter's eye.

Parallax - Aiming error due to lack of congruence between the scope and the shooter's eye, or the scope's focus. See the appropriate section in the text for a full discussion of this topic.

Point Blank Range - The range at which no compensation for trajectory is needed. This is somewhat arbitrary, because no bullet travels in a perfectly straight line. See the chapter on ballistics for a full discussion of this intricate subject.

Power - This has two meanings in this context:

1. The energy of the bullet.
2. The magnification of the scope sight.

Rest - A support for the rifle. Supporting the rifle helps eliminate unsteadiness resulting from muscular

tremor. This can be a specially-designed rest, a sandbag, or a totally improvised rest. A rest is essential for maximum accuracy.

Reticle - The sighting image, usually cross-hairs, in a scope sight.

Rifling - Grooves cut into the barrel's bore to cause the bullet to spin.

Scope - Colloquial term for "telescopic sight" or "telescope."

Silencer - Popular name for "suppressor," a device to muffle a gunshot.

Spin - Rotary motion imparted to the bullet by the barrel's rifling to enhance stability.

Support - Same as "Rest."

Suppressor - A device that fits on the muzzle of a firearm to muffle the sound of the shot. This usually works best with sub-sonic bullets.

Trajectory - The bullet's path.

Windage - Lateral adjustment of a weapon sight. This term comes about because lateral adjustments are often to compensate for the effect of wind on the flight of the bullet.

Zero - The range at which the weapon and scope are set to hit.

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